

EXHIBIT 15



US011388532B2

(12) **United States Patent**
Lamourne

(10) **Patent No.:** US 11,388,532 B2
(45) **Date of Patent:** *Jul. 12, 2022

(54) **ZONE SCENE ACTIVATION**(71) Applicant: **Sonos, Inc.**, Santa Barbara, CA (US)(72) Inventor: **Robert A. Lamourne**, Santa Barbara, CA (US)(73) Assignee: **Sonos, Inc.**, Santa Barbara, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 70 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **15/130,919**(22) Filed: **Apr. 15, 2016**(65) **Prior Publication Data**

US 2016/0234615 A1 Aug. 11, 2016

Related U.S. Application Data

(63) Continuation of application No. 14/465,457, filed on Aug. 21, 2014, now Pat. No. 9,344,206, which is a (Continued)

(51) **Int. Cl.**
G06F 17/00 (2019.01)
H04R 27/00 (2006.01)

(Continued)

(52) **U.S. Cl.**
CPC *H04R 27/00* (2013.01); *G05B 15/02* (2013.01); *G06F 3/0482* (2013.01);
(Continued)(58) **Field of Classification Search**
CPC *H04R 27/00; H04R 3/12; H04R 2227/005;*
*H04R 2430/01; G06F 3/16; G06F 3/165;*G06F 3/04842; G06F 3/0482; G05B 15/02; H03G 1/02; H03G 7/00; H04H 60/80; H04N 21/43615
(Continued)

(56)

References Cited

U.S. PATENT DOCUMENTS

3,956,591 A 5/1976 Gates, Jr.
4,105,974 A 8/1978 Rogers
(Continued)

FOREIGN PATENT DOCUMENTS

CA 2320451 A1 3/2001
CA 2533852 A1 2/2005
(Continued)

OTHER PUBLICATIONS

Yamaha DME Designer 3.5; manual copyright 2004.*
(Continued)

Primary Examiner — Paul C McCord

(57)

ABSTRACT

In general, techniques of controlling a plurality of multimedia players in groups are disclosed. According to one aspect of the present invention, a mechanism is provided to allow a user to group some of the players according to a theme or scene, where each of the players is located in a zone. When the scene is activated, the players in the scene react in a synchronized manner. For example, the players in the scene are all caused to play a multimedia source or music in a playlist, wherein the multimedia source may be located anywhere on a network.

33 Claims, 13 Drawing Sheets

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA**TRIAL EXHIBIT 7213**

CASE NO. 3:20-cv-06754-WHA

DATE ENTERED _____

BY _____

DEPUTY CLERK

US 11,388,532 B2

Page 2

Related U.S. Application Data

continuation of application No. 13/896,829, filed on May 17, 2013, now Pat. No. 8,843,228, which is a continuation of application No. 11/853,790, filed on Sep. 11, 2007, now Pat. No. 8,483,853.

(60) Provisional application No. 60/825,407, filed on Sep. 12, 2006.

(51) Int. Cl.

G05B 15/02 (2006.01)
G06F 3/0482 (2013.01)
G06F 3/04842 (2022.01)
G06F 3/16 (2006.01)
H03G 7/00 (2006.01)
H04H 60/80 (2008.01)
H04N 21/436 (2011.01)
H04R 3/12 (2006.01)
H03G 1/02 (2006.01)

(52) U.S. Cl.

CPC *G06F 3/04842* (2013.01); *G06F 3/16* (2013.01); *G06F 3/165* (2013.01); *H03G 1/02* (2013.01); *H03G 7/00* (2013.01); *H04H 60/80* (2013.01); *H04N 21/43615* (2013.01); *H04R 3/12* (2013.01); *H04R 2227/005* (2013.01); *H04R 2430/01* (2013.01)

(58) Field of Classification Search

USPC 700/94
 See application file for complete search history.

(56) References Cited

U.S. PATENT DOCUMENTS

D260,764 S	9/1981	Castagna et al.	5,299,266 A	3/1994	Lumsden
4,296,278 A	10/1981	Cullison et al.	5,313,524 A	5/1994	Van Hulle et al.
4,306,114 A	12/1981	Callahan	D350,531 S	9/1994	Tsuji
4,382,158 A	5/1983	Ohshita et al.	D350,962 S	9/1994	Reardon et al.
4,509,211 A	4/1985	Robbins	5,361,381 A	11/1994	Short
D279,779 S	7/1985	Taylor	5,372,441 A	12/1994	Louis
4,530,091 A	7/1985	Crockett	D354,059 S	1/1995	Hendricks
4,661,902 A	4/1987	Hochsprung et al.	D354,751 S	1/1995	Hersh et al.
4,689,786 A	8/1987	Sidhu et al.	D356,093 S	3/1995	McCauley et al.
4,696,037 A	9/1987	Fierens	D356,312 S	3/1995	Althans
4,701,629 A	10/1987	Citroen	D357,024 S	4/1995	Tokiyama et al.
4,712,105 A	12/1987	Kohler	5,406,634 A	4/1995	Anderson et al.
D293,671 S	1/1988	Beaumont	5,430,485 A	7/1995	Lankford et al.
4,731,814 A	3/1988	Becker et al.	5,440,644 A	8/1995	Farinelli et al.
4,816,989 A	3/1989	Finn et al.	D362,446 S	9/1995	Gasiorek et al.
4,824,059 A	4/1989	Butler	5,457,448 A	10/1995	Totsuka et al.
D301,037 S	5/1989	Matsuda	D363,933 S	11/1995	Starck
4,845,751 A	7/1989	Schwab	5,467,342 A	11/1995	Logston et al.
D304,443 S	11/1989	Grinyer et al.	D364,877 S	12/1995	Tokiyama et al.
D313,023 S	12/1990	Kolenda et al.	D364,878 S	12/1995	Green et al.
D313,398 S	1/1991	Gilchrist	D365,102 S	12/1995	Gioscia
D313,600 S	1/1991	Weber	D366,044 S	1/1996	Hara et al.
4,994,908 A	2/1991	Kuban et al.	5,481,251 A	1/1996	Buyss et al.
4,995,778 A	2/1991	Brussel	5,491,839 A	2/1996	Schotz
D320,598 S	10/1991	Auerbach et al.	5,515,345 A	5/1996	Barreira et al.
D322,609 S	12/1991	Patton	5,519,641 A	5/1996	Beers et al.
5,086,385 A	2/1992	Launey et al.	5,533,021 A	7/1996	Branstad et al.
D326,450 S	5/1992	Watanabe	D372,716 S	8/1996	Thorne
D327,060 S	6/1992	Wachob et al.	5,553,147 A	9/1996	Pineau
5,151,922 A	9/1992	Weiss	D384,940 S	10/1997	Kono et al.
5,153,579 A	10/1992	Fisch et al.	D387,352 S	12/1997	Kaneko et al.
D331,388 S	12/1992	Dahnert et al.	5,696,896 A	12/1997	Badovinatz et al.
5,182,552 A	1/1993	Paynting	D388,792 S	1/1998	Nykerk
D333,135 S	2/1993	Wachob et al.	D389,143 S	1/1998	Wicks
5,185,680 A	2/1993	Kakubo	D392,641 S	3/1998	Fenner
5,197,099 A	3/1993	Hirasawa	5,726,989 A	3/1998	Dokic
5,237,327 A	8/1993	Saitoh et al.	D393,628 S	4/1998	Ledbetter et al.
5,239,458 A	8/1993	Suzuki	5,740,235 A	4/1998	Lester et al.
5,272,757 A	12/1993	Scofield et al.	5,742,623 A	4/1998	Nuber et al.
			D394,659 S	5/1998	Biasotti et al.
			5,668,884 A	9/1997	Clair, Jr. et al.
			5,673,323 A	9/1997	Schotz et al.
			D384,940 S	10/1997	Kono et al.
			D387,352 S	12/1997	Kaneko et al.
			5,696,896 A	12/1997	Badovinatz et al.
			D388,792 S	1/1998	Nykerk
			D389,143 S	1/1998	Wicks
			D392,641 S	3/1998	Fenner
			5,726,989 A	3/1998	Dokic
			D393,628 S	4/1998	Ledbetter et al.
			5,740,235 A	4/1998	Lester et al.
			5,742,623 A	4/1998	Nuber et al.
			D394,659 S	5/1998	Biasotti et al.
			5,668,884 A	9/1997	Clair, Jr. et al.
			5,673,323 A	9/1997	Schotz et al.
			D384,940 S	10/1997	Kono et al.
			D387,352 S	12/1997	Kaneko et al.
			5,696,896 A	12/1997	Badovinatz et al.
			D388,792 S	1/1998	Nykerk
			D389,143 S	1/1998	Wicks
			D392,641 S	3/1998	Fenner
			5,726,989 A	3/1998	Dokic
			D393,628 S	4/1998	Ledbetter et al.
			5,740,235 A	4/1998	Lester et al.
			5,742,623 A	4/1998	Nuber et al.
			D394,659 S	5/1998	Biasotti et al.
			5,668,884 A	9/1997	Clair, Jr. et al.
			5,673,323 A	9/1997	Schotz et al.
			D384,940 S	10/1997	Kono et al.
			D387,352 S	12/1997	Kaneko et al.
			5,696,896 A	12/1997	Badovinatz et al.
			D388,792 S	1/1998	Nykerk
			D389,143 S	1/1998	Wicks
			D392,641 S	3/1998	Fenner
			5,726,989 A	3/1998	Dokic
			D393,628 S	4/1998	Ledbetter et al.
			5,740,235 A	4/1998	Lester et al.
			5,742,623 A	4/1998	Nuber et al.
			D394,659 S	5/1998	Biasotti et al.
			5,668,884 A	9/1997	Clair, Jr. et al.
			5,673,323 A	9/1997	Schotz et al.
			D384,940 S	10/1997	Kono et al.
			D387,352 S	12/1997	Kaneko et al.
			5,696,896 A	12/1997	Badovinatz et al.
			D388,792 S	1/1998	Nykerk
			D389,143 S	1/1998	Wicks
			D392,641 S	3/1998	Fenner
			5,726,989 A	3/1998	Dokic
			D393,628 S	4/1998	Ledbetter et al.
			5,740,235 A	4/1998	Lester et al.
			5,742,623 A	4/1998	Nuber et al.
			D394,659 S	5/1998	Biasotti et al.
			5,668,884 A	9/1997	Clair, Jr. et al.
			5,673,323 A	9/1997	Schotz et al.
			D384,940 S	10/1997	Kono et al.
			D387,352 S	12/1997	Kaneko et al.
			5,696,896 A	12/1997	Badovinatz et al.
			D388,792 S	1/1998	Nykerk
			D389,143 S	1/1998	Wicks
			D392,641 S	3/1998	Fenner
			5,726,989 A	3/1998	Dokic
			D393,628 S	4/1998	Ledbetter et al.
			5,740,235 A	4/1998	Lester et al.
			5,742,623 A	4/1998	Nuber et al.
			D394,659 S	5/1998	Biasotti et al.
			5,668,884 A	9/1997	Clair, Jr. et al.
			5,673,323 A	9/1997	Schotz et al.
			D384,940 S	10/1997	Kono et al.
			D387,352 S	12/1997	Kaneko et al.
			5,696,896 A	12/1997	Badovinatz et al.
			D388,792 S	1/1998	Nykerk
			D389,143 S	1/1998	Wicks
			D392,641 S	3/1998	Fenner
			5,726,989 A	3/1998	Dokic
			D393,628 S	4/1998	Ledbetter et al.
			5,740,235 A	4/1998	Lester et al.
			5,742,623 A	4/1998	Nuber et al.
			D394,659 S	5/1998	Biasotti et al.
			5,668,884 A	9/1997	Clair, Jr. et al.
			5,673,323 A	9/1997	Schotz et al.
			D384,940 S	10/1997	Kono et al.
			D387,352 S	12/1997	Kaneko et al.
			5,696,896 A	12/1997	Badovinatz et al.
			D388,792 S	1/1998	Nykerk
			D389,143 S	1/1998	Wicks
			D392,641 S	3/1998	Fenner
			5,726,989 A	3/1998	Dokic
			D393,628 S	4/1998	Ledbetter et al.
			5,740,235 A	4/1998	Lester et al.
			5,742,623 A	4/1998	Nuber et al.
			D394,659 S	5/1998	Biasotti et al.
			5,668,884 A	9/1997	Clair, Jr. et al.
			5,673,323 A	9/1997	Schotz et al.
			D384,940 S	10/1997	Kono et al.
			D387,352 S	12/1997	Kaneko et al.
			5,696,896 A	12/1997	Badovinatz et al.
			D388,792 S	1/1998	Nykerk
			D389,143 S	1/1998	Wicks
			D392,641 S	3/1998	Fenner
			5,726,989 A	3/1998	Dokic
			D393,628 S	4/1998	Ledbetter et al.
			5,740,235 A	4/1998	Lester et al.
			5,742,623 A	4/1998	Nuber et al.
			D394,659 S	5/1998	Biasotti et al.
			5,668,884 A	9/1997	Clair, Jr. et al.
			5,673,323 A	9/1997	Schotz et al.
			D384,940 S	10/1997	Kono et al.
			D387,352 S	12/1997	Kaneko et al.
			5,696,896 A	12/1997	Badovinatz et al.
			D388,792 S	1/1998	Nykerk
			D389,143 S	1/1998	Wicks
			D392,641 S	3/1998	Fenner
			5,726,989 A	3/1998	Dokic
			D393,628 S	4/1998	Ledbetter et al.
			5,740,235 A	4/1998	Lester et al.
			5,742,623 A	4/1998	Nuber et al.
			D394,659 S	5/1998	Biasotti et al.
			5,668,884 A	9/1997	Clair, Jr. et al.
			5,673,323 A	9/1997	Schotz et al.
			D384,940 S	10/1997	Kono et al.
			D387,352 S	12/1997	Kaneko et al.
			5,696,896 A	12/1997	Badovinatz et al.
			D388,792 S	1/1998	Nykerk
			D389,143 S	1/1998	Wicks
			D392,641 S	3/1998	Fenner
			5,726,989 A	3/1998	Dokic
			D393,628 S	4/1998	Ledbetter et al.
			5,740,235 A	4/1998	Lester et al.
			5,742,623 A	4/1998	Nuber et al.
			D394,659 S	5/1998	Biasotti et al.
			5,668,884 A	9/1997	Clair, Jr. et al.
			5,673,323 A	9/1997	Schotz et al.
			D384,940 S	10/1997	Kono et al.
			D387,352 S	12/1997	Kaneko et al.
			5,696,896 A	12/1997	Badovinatz et al.
			D388,792 S	1/1998	Nykerk
			D389,143 S	1/1998	Wicks
			D392,641 S	3/1998	Fenner
			5,726,989 A	3/1998	Dokic
			D393,628 S	4/1998	Ledbetter et al.
			5,740,235 A	4/1998	Lester et al.
			5,742,623 A	4/1998	Nuber et al.
			D394,659 S		

US 11,388,532 B2

Page 3

(56)	References Cited				
U.S. PATENT DOCUMENTS					
5,887,143 A	3/1999 Saito et al.	6,349,285 B1	2/2002 Liu et al.		
5,905,768 A	5/1999 Maturi et al.	6,349,339 B1	2/2002 Williams		
D410,927 S	6/1999 Yamagishi	6,349,352 B1	2/2002 Lea		
5,910,990 A	6/1999 Jang	6,351,821 B1	2/2002 Voith		
5,910,991 A	6/1999 Farrar	6,353,172 B1	3/2002 Fay et al.		
D412,337 S	7/1999 Hamano	6,356,871 B1	3/2002 Hemkumar et al.		
5,923,869 A	7/1999 Kashiwagi et al.	6,404,811 B1	6/2002 Cvetko et al.		
5,923,902 A	7/1999 Inagaki	6,418,150 B1	7/2002 Staats		
5,946,343 A	8/1999 Schotz et al.	6,430,353 B1	8/2002 Honda et al.		
5,956,025 A	9/1999 Goulden et al.	6,442,443 B1	8/2002 Fujii et al.		
5,956,088 A	9/1999 Shen et al.	6,462,339 S	9/2002 Allen et al.		
5,960,006 A	9/1999 Maturi et al.	6,462,340 S	9/2002 Allen et al.		
5,960,167 A	9/1999 Roberts et al.	6,462,945 S	9/2002 Skulley		
D415,496 S	10/1999 Gerba et al.	6,449,642 B2	9/2002 Bourke-Dunphy et al.		
D416,021 S	11/1999 Godette et al.	6,449,653 B2	9/2002 Klemets et al.		
5,984,512 A	11/1999 Jones et al.	6,456,783 B1	9/2002 Ando et al.		
5,987,611 A	11/1999 Freund	6,463,474 B1	10/2002 Fuh et al.		
5,990,884 A	11/1999 Douma et al.	6,466,832 B1	10/2002 Zucqert et al.		
5,991,307 A	11/1999 Komuro et al.	6,469,633 B1	10/2002 Wachter		
5,999,906 A	12/1999 Mercs et al.	D466,108 S	11/2002 Glodava et al.		
6,009,457 A	12/1999 Moller	6,487,296 B1	11/2002 Allen et al.		
6,018,376 A	1/2000 Nakatani	6,493,832 B1	12/2002 Itakura et al.		
D420,006 S	2/2000 Tonino	D468,297 S	1/2003 Ikeda		
6,026,150 A	2/2000 Frank et al.	6,522,886 B1	2/2003 Youngs et al.		
6,026,297 A	2/2000 Haartsen	6,526,325 B1	2/2003 Sussman et al.		
6,029,196 A	2/2000 Lenz	6,535,121 B2	3/2003 Matheny et al.		
6,031,818 A	2/2000 Lo et al.	D474,763 S	5/2003 Tozaki et al.		
6,032,202 A	2/2000 Lea et al.	6,475,993 S	6/2003 Meyer et al.		
6,038,614 A	3/2000 Chan et al.	D476,643 S	7/2003 Yamagishi		
6,046,550 A	4/2000 Ference et al.	D477,310 S	7/2003 Moransais		
6,061,457 A	5/2000 Stockhamer	6,587,127 B1	7/2003 Leeke et al.		
6,078,725 A	6/2000 Tanaka	6,598,172 B1	7/2003 Vandeusen et al.		
6,081,266 A	6/2000 Sciammarella	D478,051 S	8/2003 Sagawa		
6,085,236 A	7/2000 Lea	D478,069 S	8/2003 Beck et al.		
6,088,063 A	7/2000 Shiba	D478,896 S	8/2003 Summers		
D429,246 S	8/2000 Holma	6,604,023 B1	8/2003 Brown et al.		
D430,143 S	8/2000 Renk	6,611,537 B1	8/2003 Edens et al.		
6,101,195 A	8/2000 Lyons et al.	D479,520 S	9/2003 De Saulles		
6,108,485 A	8/2000 Kim	6,481,056 S	10/2003 Kawasaki et al.		
6,108,686 A	8/2000 Williams, Jr.	6,631,410 B1	10/2003 Kowalski et al.		
6,119,239 A	9/2000 Fujii	6,636,269 B1	10/2003 Baldwin		
6,122,668 A	9/2000 Teng et al.	6,653,899 B2	11/2003 Organvidez et al.		
6,122,749 A	9/2000 Gulick	6,654,720 B1	11/2003 Graham et al.		
D431,552 S	10/2000 Backs et al.	6,654,956 B1	11/2003 Trinh et al.		
D432,525 S	10/2000 Beecroft	6,658,091 B1	12/2003 Naidoo et al.		
6,127,941 A	10/2000 Van Ryzin	6,674,803 B1	1/2004 Kesselring		
6,128,318 A	10/2000 Sato	6,684,060 B1	1/2004 Curtin		
6,131,130 A	10/2000 Van Ryzin	D486,145 S	2/2004 Kaminski et al.		
6,148,205 A	11/2000 Cotton	6,687,664 B1	2/2004 Sussman et al.		
6,157,957 A	12/2000 Berthaud	6,703,940 B1	3/2004 Allen et al.		
6,163,647 A	12/2000 Terashima et al.	6,704,421 B1	3/2004 Kitamura		
6,169,725 B1	1/2001 Gibbs et al.	6,731,760 B2	5/2004 Pedersen		
6,175,872 B1	1/2001 Neumann et al.	6,732,176 B1	5/2004 Stewart et al.		
6,181,383 B1	1/2001 Fox et al.	6,741,708 B1	5/2004 Nakatsugawa		
6,185,737 B1	2/2001 Northcutt et al.	6,741,961 B2	5/2004 Lim		
6,195,435 B1	2/2001 Kitamura	D491,925 S	6/2004 Griesau et al.		
6,195,436 B1	2/2001 Scibora et al.	6,757,517 B2	6/2004 Chang		
6,199,169 B1	3/2001 Voth	D493,148 S	7/2004 Shibata et al.		
6,212,282 B1	4/2001 Mershon	6,763,274 B1	7/2004 Gilbert		
6,246,701 B1	6/2001 Slattery	D495,333 S	8/2004 Borsboom		
6,253,293 B1	6/2001 Rao et al.	6,772,267 B2	8/2004 Thaler et al.		
D444,475 S	7/2001 Levey et al.	6,778,073 B2	8/2004 Lutter et al.		
6,255,961 B1	7/2001 Van Ryzin et al.	6,778,493 B1	8/2004 Ishii		
6,256,554 B1	7/2001 Dilorenzo	6,778,869 B2	8/2004 Champion		
6,269,406 B1	7/2001 Dutcher et al.	D496,003 S	9/2004 Spira		
6,301,012 B1	10/2001 White et al.	D496,005 S	9/2004 Wang		
6,308,207 B1	10/2001 Tseng et al.	D496,335 S	9/2004 Spira		
6,310,652 B1	10/2001 Li et al.	6,788,938 B1	9/2004 Sugaya et al.		
6,313,879 B1	11/2001 Kubo et al.	D497,363 S	10/2004 Olson et al.		
6,321,252 B1	11/2001 Bhola et al.	6,803,964 B1	10/2004 Post et al.		
6,324,586 B1	11/2001 Johnson	6,809,635 B1	10/2004 Kaaresoja		
D452,520 S	12/2001 Gotham et al.	D499,086 S	11/2004 Polito		
6,332,147 B1	12/2001 Moran et al.	6,816,510 B1	11/2004 Banerjee		
6,336,219 B1	1/2002 Nathan	6,816,818 B2	11/2004 Wolf et al.		
6,343,028 B1	1/2002 Kuwaoka	6,823,225 B1	11/2004 Sass		
		6,826,283 B1	11/2004 Wheeler et al.		
		D499,395 S	12/2004 Hsu		
		D499,718 S	12/2004 Chen		
		D500,015 S	12/2004 Gubbe		

US 11,388,532 B2

Page 4

(56)	References Cited					
	U.S. PATENT DOCUMENTS					
6,836,788 B2	12/2004 Kim et al.	7,187,947 B1	3/2007 White et al.			
6,839,752 B1	1/2005 Miller et al.	7,197,148 B2	3/2007 Nourse et al.			
D501,477 S	2/2005 Hall	7,206,367 B1	4/2007 Moore			
6,859,460 B1	2/2005 Chen	7,206,618 B2	4/2007 Latto et al.			
6,859,538 B1	2/2005 Voltz	7,206,967 B1	4/2007 Marti et al.			
6,870,934 B2	3/2005 Krochmal et al.	7,209,795 B2	4/2007 Sullivan et al.			
6,873,862 B2	3/2005 Reshefsky	7,215,649 B2	5/2007 Yu et al.			
6,882,335 B2	4/2005 Saarinen	7,218,708 B2	5/2007 Berezowski et al.			
D504,872 S	5/2005 Uehara et al.	7,236,739 B2	6/2007 Chang			
D504,885 S	5/2005 Zhang et al.	7,236,773 B2	6/2007 Thomas			
6,889,207 B2	5/2005 Slemmer et al.	7,246,374 B1	7/2007 Simon et al.			
6,898,642 B2	5/2005 Chaffle et al.	7,257,398 B1	8/2007 Ukita et al.			
6,901,439 B1	5/2005 Bonasia et al.	7,260,616 B1	8/2007 Cook			
D506,463 S	6/2005 Daniels	7,263,110 B2	8/2007 Fujishiro			
6,907,458 B2	6/2005 Tomassetti et al.	7,269,338 B2	9/2007 Janevski			
6,912,610 B2	6/2005 Spencer	7,274,761 B2	9/2007 Muller et al.			
6,915,347 B2	7/2005 Hanko et al.	7,275,156 B2	9/2007 Balfanz et al.			
6,916,980 B2	7/2005 Ishida et al.	7,277,547 B1	10/2007 Delker et al.			
6,917,592 B1	7/2005 Ramankutty et al.	7,286,652 B1	10/2007 Azriel et al.			
6,919,771 B2	7/2005 Nakajima	7,289,631 B2	10/2007 Ishidohiro			
6,920,373 B2	7/2005 Xi et al.	7,293,060 B2	11/2007 Komsu			
6,931,134 B1	8/2005 Waller, Jr. et al.	7,295,548 B2	11/2007 Blank et al.			
6,931,557 B2	8/2005 Togawa	7,302,468 B2	11/2007 Wijeratne			
6,934,766 B1	8/2005 Russell	7,305,694 B2	12/2007 Commons et al.			
6,937,988 B1	8/2005 Hemkumar et al.	7,308,188 B2	12/2007 Namatame			
6,950,666 B2	9/2005 Asakawa	7,308,489 B2	12/2007 Weast			
6,965,948 B1	11/2005 Eneborg et al.	7,310,334 B1	12/2007 Fitzgerald et al.			
6,970,481 B2	11/2005 Gray, III et al.	7,312,785 B2	12/2007 Tsuk et al.			
6,970,482 B2	11/2005 Kim	7,313,384 B1	12/2007 Meenan et al.			
6,981,259 B2	12/2005 Luman et al.	7,313,593 B1	12/2007 Pulito et al.			
6,985,694 B1	1/2006 De Bonet et al.	7,319,764 B1	1/2008 Reid et al.			
6,987,767 B2	1/2006 Saito	7,324,857 B2	1/2008 Goddard			
6,987,947 B2	1/2006 Richenstein et al.	7,330,875 B1	2/2008 Parasnis et al.			
6,993,570 B1	1/2006 Irani	7,333,519 B2	2/2008 Sullivan et al.			
D515,072 S	2/2006 Lee	7,346,332 B2	3/2008 McCarty et al.			
D515,557 S	2/2006 Okuley	7,356,011 B1	4/2008 Waters et al.			
7,007,106 B1	2/2006 Flood et al.	7,359,006 B1	4/2008 Xiang et al.			
7,020,791 B1	3/2006 Aweya et al.	7,363,363 B2	4/2008 Dal Canto et al.			
D518,475 S	4/2006 Yang et al.	7,366,206 B2	4/2008 Lockridge et al.			
7,043,477 B2	5/2006 Mercer et al.	7,372,846 B2	5/2008 Zwack			
7,043,651 B2	5/2006 Aweya et al.	7,376,834 B2	5/2008 Edwards et al.			
7,046,677 B2	5/2006 Monta et al.	7,391,791 B2	6/2008 Balassanian et al.			
7,047,308 B2	5/2006 Deshpande	7,392,102 B2	6/2008 Sullivan et al.			
7,054,888 B2	5/2006 Lachapelle et al.	7,392,387 B2	6/2008 Balfanz et al.			
7,058,889 B2	6/2006 Trovato et al.	7,392,481 B2	6/2008 Gewickey et al.			
7,068,596 B1	6/2006 Mou	7,400,644 B2	7/2008 Sakamoto et al.			
D524,296 S	7/2006 Kita	7,400,732 B2	7/2008 Staddon et al.			
7,072,477 B1	7/2006 Kincaid	7,412,499 B2	8/2008 Chang et al.			
7,076,204 B2	7/2006 Richenstein et al.	7,424,267 B2	9/2008 Eisenbach			
D527,375 S	8/2006 Flora et al.	7,428,310 B2	9/2008 Park			
7,092,528 B2	8/2006 Patrick et al.	7,430,181 B1	9/2008 Hong			
7,092,694 B2	8/2006 Griep et al.	7,454,619 B2	11/2008 Smetters et al.			
7,096,169 B2	8/2006 Crutchfield et al.	7,457,948 B1	11/2008 Bilicksa et al.			
7,107,442 B2	9/2006 Cheshire	7,472,058 B2	12/2008 Tseng et al.			
7,113,999 B2	9/2006 Pestoni et al.	7,474,677 B2	1/2009 Trott			
7,115,017 B1	10/2006 Laursen et al.	7,483,538 B2	1/2009 McCarty et al.			
7,120,168 B2	10/2006 Zimmermann	7,483,540 B2	1/2009 Rabinowitz et al.			
7,123,731 B2	10/2006 Cohen et al.	7,483,958 B1	1/2009 Elabbady et al.			
7,130,316 B2	10/2006 Kovacevic	7,490,044 B2	2/2009 Kulkarni			
7,130,368 B1	10/2006 Aweya et al.	7,492,912 B2	2/2009 Chung et al.			
7,130,608 B2	10/2006 Hollstrom et al.	7,505,889 B2	3/2009 Salmonsens et al.			
7,130,616 B2	10/2006 Janik	7,509,181 B2	3/2009 Champion			
7,136,934 B2	11/2006 Carter et al.	7,519,188 B2	4/2009 Berardi et al.			
7,139,981 B2	11/2006 Mayer et al.	7,519,667 B1	4/2009 Capps			
7,143,141 B1	11/2006 Morgan et al.	7,532,862 B2	5/2009 Cheshire			
7,143,939 B2	12/2006 Henzerling	7,539,551 B2	5/2009 Komura et al.			
7,146,260 B2	12/2006 Preston et al.	7,548,744 B2	6/2009 Oesterling et al.			
7,158,488 B2	1/2007 Fujimori	7,548,851 B1	6/2009 Lau et al.			
7,158,783 B2	1/2007 Eguchi	7,558,224 B1	7/2009 Surazski et al.			
7,161,939 B2	1/2007 Israel et al.	7,558,635 B1	7/2009 Thiel et al.			
7,162,315 B2	1/2007 Gilbert	7,561,697 B2	7/2009 Harris			
7,171,010 B2	1/2007 Martin et al.	7,561,932 B1	7/2009 Holmes et al.			
7,174,157 B2	2/2007 Gassho et al.	7,571,014 B1	8/2009 Lamourne et al.			
7,184,774 B2	2/2007 Robinson et al.	7,574,274 B2	8/2009 Holmes			
7,185,090 B2	2/2007 Kowalski et al.	7,581,096 B2	8/2009 Balfanz et al.			
		7,599,685 B2	10/2009 Goldberg et al.			
		7,606,174 B2	10/2009 Ochi et al.			
		7,620,468 B2 *	11/2009 Shimizu H04H 60/04			
			381/119			

US 11,388,532 B2

Page 5

(56)

References Cited**U.S. PATENT DOCUMENTS**

7,626,952 B2	12/2009	Slemmer et al.	8,014,423 B2	9/2011	Thaler et al.
7,627,825 B2	12/2009	Kakuda	8,015,306 B2	9/2011	Bowman
7,630,500 B1	12/2009	Beckman et al.	8,020,023 B2	9/2011	Millington et al.
7,630,501 B2	12/2009	Blank et al.	8,023,663 B2	9/2011	Goldberg
7,631,119 B2	12/2009	Moore et al.	8,028,038 B2	9/2011	Weel
7,634,093 B2	12/2009	McGrath	8,028,323 B2	9/2011	Weel
7,643,894 B2	1/2010	Braithwaite et al.	8,041,062 B2	10/2011	Cohen et al.
7,653,344 B1	1/2010	Feldman et al.	8,045,721 B2	10/2011	Burgan et al.
7,657,224 B2	2/2010	Goldberg et al.	8,045,952 B2	10/2011	Qureshey et al.
7,657,255 B2	2/2010	Abel et al.	8,050,203 B2	11/2011	Jacobsen et al.
7,657,644 B1	2/2010	Zheng	8,050,652 B2	11/2011	Qureshey et al.
7,657,910 B1	2/2010	McAulay et al.	8,054,987 B2	11/2011	Seydoux
7,665,115 B2	2/2010	Gallo et al.	8,055,364 B2	11/2011	Champion
7,668,990 B2	2/2010	Krzyanowski et al.	8,063,698 B2	11/2011	Howard
7,669,113 B1	2/2010	Moore et al.	8,074,253 B1	12/2011	Nathan
7,669,219 B2	2/2010	Scott	8,086,287 B2	12/2011	Mooney et al.
7,672,470 B2	3/2010	Lee	8,086,752 B2	12/2011	Millington et al.
7,675,943 B2	3/2010	Mosig et al.	8,090,317 B2	1/2012	Burge et al.
7,676,044 B2	3/2010	Sasaki et al.	8,103,099 B2	1/2012	McCarty et al.
7,676,142 B1	3/2010	Hung	8,107,639 B2	1/2012	Moeller et al.
7,688,306 B2	3/2010	Wehrenberg et al.	8,111,132 B2	2/2012	Allen et al.
7,689,304 B2	3/2010	Sasaki	8,112,032 B2	2/2012	Ko et al.
7,689,305 B2	3/2010	Kreifeldt et al.	8,116,476 B2	2/2012	Inohara
7,690,017 B2	3/2010	Stecyk et al.	8,126,172 B2	2/2012	Horbach et al.
7,702,279 B2	4/2010	Ko et al.	8,131,389 B1	3/2012	Hardwick et al.
7,702,403 B1	4/2010	Gladwin et al.	8,131,390 B2	3/2012	Braithwaite et al.
7,710,941 B2	5/2010	Rietschel et al.	8,134,650 B2	3/2012	Maxson et al.
7,711,774 B1	5/2010	Rothschild	8,135,141 B2	3/2012	Shiba
7,716,375 B2	5/2010	Blum et al.	8,139,774 B2	3/2012	Berardi et al.
7,720,096 B2	5/2010	Klemets	8,144,883 B2	3/2012	Pdersen et al.
7,721,032 B2	5/2010	Bushell et al.	8,148,622 B2	4/2012	Rothkopf et al.
7,742,740 B2	6/2010	Goldberg et al.	8,150,079 B2	4/2012	Maeda et al.
7,742,832 B1	6/2010	Feldman et al.	8,156,337 B2	4/2012	Balfanz et al.
7,743,009 B2	6/2010	Hangartner et al.	8,160,281 B2	4/2012	Kim et al.
7,746,906 B2	6/2010	Jinzaki et al.	8,169,938 B2	5/2012	Duchscher et al.
7,752,329 B1	7/2010	Meenan et al.	8,170,222 B2	5/2012	Dunko
7,757,076 B2	7/2010	Stewart et al.	8,170,260 B2	5/2012	Reining et al.
7,761,176 B2	7/2010	Ben-Yaacov et al.	8,175,292 B2	5/2012	Aylward et al.
7,765,315 B2	7/2010	Batson et al.	8,175,297 B1	5/2012	Ho et al.
RE41,608 E	8/2010	Blair et al.	8,185,674 B2	5/2012	Moore et al.
7,792,311 B1	9/2010	Holmgren et al.	8,189,824 B2	5/2012	Strauss et al.
7,793,206 B2	9/2010	Lim et al.	8,194,874 B2	6/2012	Starobin et al.
7,804,972 B2	9/2010	Melanson	8,204,890 B1	6/2012	Gogan
7,805,210 B2	9/2010	Cucos et al.	8,208,653 B2	6/2012	Eo et al.
7,817,960 B2	10/2010	Tan et al.	8,214,447 B2	7/2012	Deslippe et al.
7,827,259 B2	11/2010	Heller et al.	8,214,740 B2	7/2012	Johnson
7,831,054 B2	11/2010	Ball et al.	8,214,873 B2	7/2012	Weel
7,835,689 B2	11/2010	Goldberg et al.	8,218,790 B2	7/2012	Bull et al.
7,849,181 B2	12/2010	Slemmer et al.	8,229,125 B2	7/2012	Short
7,853,341 B2	12/2010	McCarty et al.	8,230,099 B2	7/2012	Weel
7,865,137 B2	1/2011	Goldberg et al.	8,233,029 B2	7/2012	Yoshida et al.
7,882,234 B2	2/2011	Watanabe et al.	8,233,632 B1	7/2012	MacDonald
7,885,622 B2	2/2011	Krampf et al.	8,233,635 B2	7/2012	Shiba
7,899,656 B2	3/2011	Crutchfield, Jr.	8,233,648 B2	7/2012	Sorek et al.
7,904,720 B2	3/2011	Smetters et al.	8,234,395 B2	7/2012	Millington et al.
7,907,736 B2	3/2011	Yuen et al.	8,238,578 B2	8/2012	Aylward
7,907,819 B2	3/2011	Ando et al.	8,239,559 B2	8/2012	Rajapakse
7,916,579 B1	3/2011	Treyz et al.	8,239,748 B1	8/2012	Moore et al.
7,916,861 B2	3/2011	Conley et al.	8,243,961 B1	8/2012	Morrill
7,916,877 B2	3/2011	Goldberg et al.	8,250,218 B2	8/2012	Watanabe et al.
7,917,082 B2	3/2011	Goldberg et al.	8,265,310 B2	9/2012	Berardi et al.
7,933,418 B2	4/2011	Morishima	8,270,631 B2	9/2012	Kusunoki
7,934,239 B1	4/2011	Dagman	8,279,709 B2	10/2012	Choisel et al.
7,937,089 B2	5/2011	Smetters et al.	8,281,001 B2	10/2012	Busam et al.
7,937,752 B2	5/2011	Balfanz et al.	8,285,404 B1	10/2012	Kekki
7,945,636 B2	5/2011	Nelson et al.	8,290,185 B2	10/2012	Kim
7,945,708 B2	5/2011	Ohkita	8,290,603 B1	10/2012	Lambourne
7,958,441 B2	6/2011	Heller et al.	8,300,845 B2	10/2012	Zurek et al.
7,962,482 B2	6/2011	Handman et al.	8,306,235 B2	11/2012	Mahowald
7,966,388 B1	6/2011	Pugaczewski et al.	8,311,226 B2	11/2012	Lorgeoux et al.
7,975,051 B2	7/2011	Saint Clair et al.	8,315,555 B2	11/2012	Ko et al.
7,987,294 B2	7/2011	Bryce et al.	8,316,147 B2	11/2012	Batson et al.
7,995,732 B2	8/2011	Koch et al.	8,325,931 B2	12/2012	Howard et al.
7,996,566 B1	8/2011	Sylvain et al.	8,325,935 B2	12/2012	Rutschman
7,996,588 B2	8/2011	Subbiah et al.	8,331,585 B2	12/2012	Hagen et al.
			8,340,330 B2	12/2012	Yoon et al.
			8,345,709 B2	1/2013	Nitzpon et al.
			8,364,295 B2	1/2013	Beckmann et al.
			8,370,678 B2	2/2013	Millington et al.

US 11,388,532 B2

Page 6

(56)	References Cited			
	U.S. PATENT DOCUMENTS			
8,374,595 B2	2/2013 Chien et al.	9,078,281 B2	7/2015 Matsuda et al.	
8,391,501 B2	3/2013 Khawand et al.	9,112,622 B2 *	8/2015 Miyata	H04R 3/00
8,407,623 B2	3/2013 Kerr et al.	9,137,602 B2	9/2015 Mayman et al.	
8,411,883 B2	4/2013 Matsumoto	9,160,965 B2	10/2015 Redmann et al.	
8,423,659 B2	4/2013 Millington	9,195,258 B2	11/2015 Millington	
8,423,893 B2	4/2013 Ramsay et al.	9,219,959 B2	12/2015 Kallai et al.	
8,432,851 B2	4/2013 Xu et al.	9,226,073 B2	12/2015 Ramos et al.	
8,433,076 B2	4/2013 Zurek et al.	9,245,514 B2	1/2016 Donaldson	
8,442,239 B2	5/2013 Bruelle-Drews et al.	9,270,935 B2	2/2016 Igoe et al.	
8,452,020 B2	5/2013 Gregg et al.	9,325,286 B1	4/2016 Yang	
8,457,334 B2	6/2013 Yoon et al.	9,344,206 B2	5/2016 Lambourne	
8,463,184 B2	6/2013 Dua	9,560,448 B2	1/2017 Hartung	
8,463,875 B2	6/2013 Katz et al.	9,769,580 B2	9/2017 Rabinowitz et al.	
8,473,844 B2	6/2013 Kreifeldt et al.	9,998,321 B2	6/2018 Cheshire	
8,477,958 B2	7/2013 Moeller et al.	10,075,334 B1	9/2018 Kozura et al.	
8,483,853 B1	7/2013 Lambourne	10,127,906 B1	11/2018 Mutagi et al.	
8,498,726 B2	7/2013 Kim et al.	10,310,801 B2	6/2019 Krampf et al.	
8,509,211 B2	8/2013 Trotter et al.	10,887,650 B2	1/2021 Wilson et al.	
8,509,463 B2	8/2013 Goh et al.	2001/0001160 A1	5/2001 Shoff et al.	
8,515,389 B2	8/2013 Smetters et al.	2001/0009604 A1	7/2001 Ando et al.	
8,520,870 B2	8/2013 Sato et al.	2001/0020193 A1	9/2001 Teramachi et al.	
8,565,455 B2	10/2013 Worrell et al.	2001/0022823 A1	9/2001 Renaud	
8,577,045 B2	11/2013 Gibbs	2001/0027498 A1	10/2001 Van De Meulenhoef et al.	
8,577,048 B2	11/2013 Chaikin et al.	2001/0032188 A1	10/2001 Miyabe et al.	
8,588,432 B1	11/2013 Simon	2001/0042107 A1	11/2001 Palm	
8,588,949 B2	11/2013 Lambourne et al.	2001/0043456 A1	11/2001 Atkinson	
8,600,075 B2	12/2013 Lim	2001/0046235 A1	11/2001 Trevitt et al.	
8,600,084 B1	12/2013 Garrett	2001/0047377 A1	11/2001 Sincaglia et al.	
8,601,394 B2	12/2013 Sheehan et al.	2001/0050991 A1	12/2001 Eves	
8,611,559 B2	12/2013 Sanders	2001/0055950 A1	12/2001 Davies et al.	
8,615,091 B2	12/2013 Terwal	2002/0002039 A1	1/2002 Qureshey et al.	
8,620,006 B2	12/2013 Berardi et al.	2002/0002562 A1	1/2002 Moran et al.	
8,639,830 B2	1/2014 Bowman	2002/0002565 A1	1/2002 Ohyama	
8,654,995 B2	2/2014 Silber et al.	2002/0003548 A1	1/2002 Krusche et al.	
8,672,744 B1	3/2014 Gronkowski et al.	2002/0022453 A1	2/2002 Balog et al.	
8,683,009 B2	3/2014 Ng et al.	2002/0026442 A1	2/2002 Lipscomb et al.	
8,688,431 B2	4/2014 Lyons et al.	2002/0034374 A1	3/2002 Barton	
8,700,730 B2	4/2014 Rowe	2002/0042844 A1	4/2002 Chiazzese	
8,731,206 B1	5/2014 Park	2002/0049843 A1	4/2002 Barone et al.	
8,750,282 B2	6/2014 Gelter et al.	2002/0062406 A1	5/2002 Chang et al.	
8,751,026 B2	6/2014 Sato et al.	2002/0065926 A1	5/2002 Hackney et al.	
8,755,763 B2	6/2014 Qureshey et al.	2002/0067909 A1	6/2002 Iivonen	
8,762,565 B2	6/2014 Togashi et al.	2002/0072816 A1	6/2002 Shedema et al.	
8,768,252 B2	7/2014 Watson et al.	2002/0072817 A1	6/2002 Champion	
8,775,546 B2	7/2014 Millington	2002/0073228 A1	6/2002 Cognet et al.	
8,788,080 B1	7/2014 Kallai et al.	2002/0078161 A1	6/2002 Cheng	
8,797,926 B2	8/2014 Kearney, III et al.	2002/0078293 A1	6/2002 Kou et al.	
8,818,538 B2	8/2014 Sakata	2002/0080783 A1	6/2002 Fujimori	
8,819,554 B2	8/2014 Bass et al.	2002/0083172 A1	6/2002 Knowles et al.	
8,843,224 B2	9/2014 Holmgren et al.	2002/0083342 A1	6/2002 Webb et al.	
8,843,228 B2	9/2014 Lambourne	2002/0090914 A1	7/2002 Kang et al.	
8,843,586 B2	9/2014 Pantos et al.	2002/0093478 A1	7/2002 Yeh	
8,855,319 B2	10/2014 Liu et al.	2002/0095460 A1	7/2002 Benson	
8,861,739 B2	10/2014 Ojanpera	2002/0098878 A1	7/2002 Mooney et al.	
8,879,761 B2	11/2014 Johnson et al.	2002/0101357 A1	8/2002 Gharapetian	
8,885,851 B2	11/2014 Westenbroek	2002/0103635 A1	8/2002 Mesarovic et al.	
8,886,347 B2	11/2014 Lambourne	2002/0109710 A1	8/2002 Holtz et al.	
8,904,066 B2	12/2014 Moore et al.	2002/0112084 A1	8/2002 Deen et al.	
8,914,559 B2	12/2014 Kalayjian et al.	2002/0112244 A1	8/2002 Liou et al.	
8,917,877 B2	12/2014 Haaff et al.	2002/0114354 A1	8/2002 Sinha et al.	
8,923,997 B2	12/2014 Kallai et al.	2002/0114359 A1	8/2002 Ibaraki et al.	
8,930,006 B2	1/2015 Haatainen	2002/0124097 A1	9/2002 Isely et al.	
8,934,647 B2	1/2015 Joyce et al.	2002/0129128 A1	9/2002 Gold et al.	
8,934,655 B2	1/2015 Breen et al.	2002/0129156 A1	9/2002 Yoshikawa	
8,942,252 B2	1/2015 Balassanian et al.	2002/0131398 A1	9/2002 Taylor	
8,942,395 B2	1/2015 Lissaman et al.	2002/0131761 A1	9/2002 Kawasaki et al.	
8,954,177 B2	2/2015 Sanders	2002/0146981 A1	10/2002 Saint-Hilaire et al.	
8,965,544 B2	2/2015 Ramsay	2002/0150053 A1	10/2002 Gray et al.	
8,965,546 B2	2/2015 Visser et al.	2002/0159596 A1	10/2002 Durand et al.	
8,966,394 B2	2/2015 Gates et al.	2002/0163361 A1	11/2002 Parkin	
8,977,974 B2	3/2015 Kraut	2002/0165721 A1	11/2002 Chang et al.	
8,984,442 B2	3/2015 Pirnack et al.	2002/0165921 A1	11/2002 Sapieyevski	
9,014,833 B2	4/2015 Goh et al.	2002/0168938 A1	11/2002 Chang	
9,020,153 B2	4/2015 Britt, Jr.	2002/0173273 A1	11/2002 Spurgat et al.	
9,042,556 B2	5/2015 Kallai et al.	2002/0174243 A1	11/2002 Spurgat et al.	

US 11,388,532 B2

Page 7

(56)	References Cited					
U.S. PATENT DOCUMENTS						
2002/0177411 A1	11/2002 Yajima et al.	2004/0015252 A1	1/2004 Aiso et al.			
2002/0181355 A1	12/2002 Shikunami et al.	2004/0019497 A1	1/2004 Volk et al.			
2002/0184310 A1	12/2002 Traversat et al.	2004/0019807 A1	1/2004 Freund et al.			
2002/0188762 A1	12/2002 Tomassetti et al.	2004/0019911 A1	1/2004 Gates et al.			
2002/0194309 A1	12/2002 Carter et al.	2004/0023697 A1	2/2004 Komura			
2002/0196951 A1	12/2002 Tsai	2004/0024478 A1	2/2004 Hans et al.			
2003/0002609 A1	1/2003 Faller et al.	2004/0024925 A1	2/2004 Cypher et al.			
2003/0002689 A1	1/2003 Folio	2004/0027166 A1	2/2004 Mangum et al.			
2003/0002849 A1	1/2003 Lord	2004/0032348 A1	2/2004 Lai et al.			
2003/0008616 A1	1/2003 Anderson	2004/0032421 A1	2/2004 Williamson et al.			
2003/0014486 A1	1/2003 May	2004/0037433 A1	2/2004 Chen			
2003/0018797 A1	1/2003 Dunning et al.	2004/0041836 A1	3/2004 Zaner et al.			
2003/0020763 A1	1/2003 Mayer et al.	2004/0042629 A1	3/2004 Mellone et al.			
2003/0023411 A1	1/2003 Witmer et al.	2004/0044742 A1	3/2004 Evron et al.			
2003/0023741 A1	1/2003 Tomassetti et al.	2004/0048569 A1	3/2004 Kawamura			
2003/0031333 A1	2/2003 Cohen et al.	2004/0059842 A1	3/2004 Hanson et al.			
2003/0035072 A1	2/2003 Hagg	2004/0059965 A1	3/2004 Marshall et al.			
2003/0035444 A1	2/2003 Zwack	2004/0066736 A1	4/2004 Kroeger			
2003/0041173 A1	2/2003 Hoyle	2004/0071299 A1	4/2004 Yoshino			
2003/0041174 A1	2/2003 Wen et al.	2004/0075767 A1	4/2004 Neuman et al.			
2003/0043856 A1	3/2003 Lakanemi et al.	2004/0078383 A1	4/2004 Mercer et al.			
2003/0043924 A1	3/2003 Haddad et al.	2004/0080671 A1	4/2004 Siemens et al.			
2003/0046703 A1	3/2003 Knowles et al.	2004/0093096 A1	5/2004 Huang et al.			
2003/0050058 A1	3/2003 Walsh et al.	2004/0098754 A1	5/2004 Vella et al.			
2003/0055892 A1	3/2003 Huitema et al.	2004/0111473 A1	6/2004 Lysenko et al.			
2003/0056220 A1	3/2003 Thornton et al.	2004/0114771 A1	6/2004 Vaughan et al.			
2003/0061428 A1	3/2003 Garney et al.	2004/0117044 A1	6/2004 Konetski			
2003/0063755 A1	4/2003 Nourse et al.	2004/0117462 A1	6/2004 Bodin et al.			
2003/0066094 A1	4/2003 Van Der Schaar et al.	2004/0128701 A1	7/2004 Kaneko et al.			
2003/0067437 A1	4/2003 McClintock et al.	2004/0131192 A1	7/2004 Metcalf			
2003/0073432 A1	4/2003 Meade	2004/0133689 A1	7/2004 Vasisht			
2003/0091322 A1	5/2003 Van	2004/0143368 A1	7/2004 May et al.			
2003/0097478 A1	5/2003 King	2004/0143852 A1	7/2004 Meyers			
2003/0099212 A1	5/2003 Anjum et al.	2004/0147224 A1	7/2004 Lee			
2003/0099221 A1	5/2003 Rhee	2004/0148237 A1	7/2004 Bittmann et al.			
2003/0100335 A1	5/2003 Gassho et al.	2004/0168081 A1	8/2004 Ladas et al.			
2003/0101253 A1	5/2003 Saito et al.	2004/0170383 A1	9/2004 Mazur			
2003/0103088 A1	6/2003 Dresti et al.	2004/0171346 A1	9/2004 Lin			
2003/0103464 A1	6/2003 Wong et al.	2004/0176025 A1	9/2004 Holm et al.			
2003/0110329 A1	6/2003 Higaki et al.	2004/0177167 A1	9/2004 Iwamura et al.			
2003/0126211 A1	7/2003 Anttila et al.	2004/0179554 A1	9/2004 Tsao			
2003/0135822 A1	7/2003 Evans	2004/0183827 A1	9/2004 Putterman et al.			
2003/0157951 A1	8/2003 Hasty	2004/0185773 A1	9/2004 Gerber et al.			
2003/0161479 A1	8/2003 Yang et al.	2004/0195313 A1	10/2004 Lee			
2003/0165154 A1	9/2003 Lindsey et al.	2004/0203354 A1	10/2004 Yue			
2003/0167335 A1	9/2003 Alexander	2004/0203376 A1	10/2004 Phillipps			
2003/0172123 A1	9/2003 Polan et al.	2004/0203378 A1	10/2004 Powers			
2003/0177889 A1	9/2003 Koseki et al.	2004/0203590 A1	10/2004 Shteyn			
2003/0179780 A1	9/2003 Walker et al.	2004/0203936 A1	10/2004 Ogin et al.			
2003/0185400 A1	10/2003 Yoshizawa et al.	2004/0208158 A1	10/2004 Fellman et al.			
2003/0195964 A1	10/2003 Mane	2004/0212320 A1	10/2004 Douskalis et al.			
2003/0198254 A1	10/2003 Sullivan et al.	2004/0228367 A1	11/2004 Noda et al.			
2003/0198255 A1	10/2003 Sullivan et al.	2004/0248601 A1	11/2004 Klotz et al.			
2003/0198257 A1	10/2003 Sullivan et al.	2004/0249490 A1	12/2004 Lindemann et al.			
2003/0200001 A1	10/2003 Goddard	2004/0249965 A1	12/2004 Fadell et al.			
2003/0204273 A1	10/2003 Dinker et al.	2004/0249982 A1	12/2004 Ledoux et al.			
2003/0204509 A1	10/2003 Dinker et al.	2004/0252400 A1	12/2004 Mosig et al.			
2003/0210796 A1	11/2003 McCarty et al.	2004/0253969 A1	12/2004 Chang			
2003/0212802 A1	11/2003 Rector et al.	2004/0264717 A1*	12/2004 Sakai			
2003/0215097 A1	11/2003 Crutchfield, Jr.	2004/0264717 A1*	12/2004 Huggins et al.			
2003/0219007 A1	11/2003 Barrack et al.	2004/0264717 A1*	12/2004 Arnold et al.			
2003/0220705 A1	11/2003 Ibey	2004/0267390 A1	12/2004 Blank et al.			
2003/0225834 A1	12/2003 Lee et al.	2005/0002535 A1	1/2005 Fujita H04R 5/04			
2003/0227478 A1	12/2003 Chatfield	2005/0010691 A1	1/2005 381/307			
2003/0229900 A1	12/2003 Reisman	2005/0011388 A1				
2003/0231208 A1	12/2003 Hanon et al.	2005/0013394 A1				
2003/0231871 A1	12/2003 Ushimaru	2005/0015551 A1				
2003/0235304 A1	12/2003 Evans et al.	2005/00214524 A1				
2004/0001106 A1	1/2004 Deutscher et al.	2005/0021590 A1				
2004/0001484 A1	1/2004 Ozguner	2005/0027821 A1				
2004/0001591 A1	1/2004 Mani et al.	2005/0031135 A1				
2004/0008852 A1	1/2004 Also et al.	2005/0047605 A1				
2004/0010727 A1	1/2004 Fujinami	2005/0058149 A1				
2004/0012620 A1	1/2004 Buhler et al.	2005/0060435 A1				
2004/0014426 A1	1/2004 Moore	2005/0062637 A1				

US 11,388,532 B2

Page 8

(56)	References Cited					
U.S. PATENT DOCUMENTS						
2005/0069153 A1	3/2005 Hall et al.	2007/0087686 A1	4/2007 Holm et al.			
2005/0081213 A1	4/2005 Suzuoki et al.	2007/0142022 A1	6/2007 Madonna et al.			
2005/0100166 A1	5/2005 Smetters et al.	2007/0142944 A1	6/2007 Goldberg et al.			
2005/0100174 A1	5/2005 Howard et al.	2007/0143493 A1	6/2007 Mullig et al.			
2005/0105052 A1	5/2005 McCormick et al.	2007/0169115 A1	7/2007 Ko et al.			
2005/0114538 A1	5/2005 Rose	2007/0180137 A1	8/2007 Rajapakse			
2005/0120128 A1	6/2005 Willes et al.	2007/0189544 A1	8/2007 Rosenberg			
2005/0125222 A1	6/2005 Brown et al.	2007/0192156 A1	8/2007 Gauger			
2005/0125357 A1	6/2005 Saadat et al.	2007/0206829 A1	9/2007 Weinans et al.			
2005/0129240 A1	6/2005 Balfanz et al.	2007/0217400 A1	9/2007 Staples			
2005/0131558 A1	6/2005 Braithwaite et al.	2007/0220150 A1	9/2007 Garg			
2005/0144284 A1	6/2005 Ludwig et al.	2007/0223725 A1	9/2007 Neumann et al.			
2005/0147261 A1	7/2005 Yeh	2007/0249295 A1	10/2007 Ukita et al.			
2005/0149204 A1	7/2005 Manchester et al.	2007/0265031 A1	11/2007 Koizumi et al.			
2005/0152557 A1	7/2005 Sasaki et al.	2007/0271388 A1	11/2007 Bowra et al.			
2005/0154766 A1	7/2005 Huang et al.	2007/0288610 A1	12/2007 Saint et al.			
2005/0159833 A1	7/2005 Giaimo et al.	2007/0299778 A1	12/2007 Haveson et al.			
2005/0160270 A1	7/2005 Goldberg et al.	2008/0002836 A1	1/2008 Moeller et al.			
2005/0166135 A1	7/2005 Burke et al.	2008/0007649 A1	1/2008 Bennett			
2005/0168630 A1	8/2005 Yamada et al.	2008/0007650 A1	1/2008 Bennett			
2005/0177256 A1	8/2005 Shintani et al.	2008/0007651 A1	1/2008 Bennett			
2005/0177643 A1	8/2005 Xu	2008/0018785 A1	1/2008 Bennett			
2005/0181348 A1	8/2005 Carey et al.	2008/0022320 A1	1/2008 Ver Steeg			
2005/0195205 A1	9/2005 Abrams, Jr.	2008/0025535 A1	1/2008 Rajapakse			
2005/0195823 A1	9/2005 Chen et al.	2008/0045140 A1	2/2008 Korhonen			
2005/0195999 A1*	9/2005 Takemura	H04R 27/00 381/119	2008/0061578 A1	3/2008 Igoe		
			2008/0065232 A1	3/2008 Igoe		
			2008/0066094 A1	3/2008 Igoe		
			2008/0066120 A1	3/2008 Igoe		
			2008/0072816 A1	3/2008 Riess et al.		
			2008/0075295 A1	3/2008 Mayman et al.		
2005/0197725 A1	9/2005 Alexander et al.	2008/0077261 A1	3/2008 Baudino et al.			
2005/0198574 A1	9/2005 Lamkin et al.	2008/0077619 A1	3/2008 Gilley et al.			
2005/0201549 A1	9/2005 Dieudie et al.	2008/0077620 A1	3/2008 Gilley et al.			
2005/0216556 A1	9/2005 Manion et al.	2008/0086318 A1	4/2008 Gilley et al.			
2005/0254505 A1	11/2005 Chang et al.	2008/0091771 A1	4/2008 Allen et al.			
2005/0262217 A1	11/2005 Nonaka et al.	2008/0092204 A1	4/2008 Bryce et al.			
2005/0266798 A1	12/2005 Moloney et al.	2008/0109852 A1	5/2008 Kretz et al.			
2005/0266826 A1	12/2005 Vlad	2008/0109867 A1	5/2008 Panabaker et al.			
2005/0281255 A1	12/2005 Davies et al.	2008/0120429 A1	5/2008 Millington et al.			
2005/0283820 A1	12/2005 Richards et al.	2008/0126943 A1	5/2008 Parasnis et al.			
2005/0288805 A1	12/2005 Moore et al.	2008/0144861 A1	6/2008 Melanson et al.			
2005/0289224 A1	12/2005 Deslippe et al.	2008/0144864 A1	6/2008 Huon			
2005/0289244 A1	12/2005 Sahu et al.	2008/0146289 A1	6/2008 Korneluk et al.			
2006/0041616 A1	2/2006 Ludwig et al.	2008/0152165 A1	6/2008 Zacchi			
2006/0041639 A1	2/2006 Lamkin et al.	2008/0159545 A1	7/2008 Takumai et al.			
2006/0045281 A1	3/2006 Korneluk et al.	2008/0162668 A1	7/2008 Miller			
2006/0072489 A1	4/2006 Toyoshima	2008/0189272 A1	8/2008 Powers et al.			
2006/0090021 A1	4/2006 Weidig	2008/0205070 A1	8/2008 Osada			
2006/0095516 A1	5/2006 Wijeratne	2008/0212786 A1	9/2008 Park			
2006/0098936 A1	5/2006 Ikeda et al.	2008/0215169 A1	9/2008 Debettencourt et al.			
2006/0119497 A1	6/2006 Miller et al.	2008/0242222 A1	10/2008 Bryce et al.			
2006/0143236 A1	6/2006 Wu	2008/0247554 A1	10/2008 Caffrey			
2006/0149402 A1	7/2006 Chung	2008/0263010 A1	10/2008 Roychoudhuri et al.			
2006/0155721 A1	7/2006 Grunwald et al.	2008/0273714 A1	11/2008 Hartung			
2006/0173844 A1	8/2006 Zhang et al.	2008/0291863 A1	11/2008 Agren et al.			
2006/0179160 A1	8/2006 Uehara et al.	2008/0303947 A1	12/2008 Ohnishi et al.			
2006/0193454 A1	8/2006 Abou-Chakra et al.	2009/0011798 A1	1/2009 Yamada			
2006/0193482 A1	8/2006 Harvey et al.	2009/0017868 A1	1/2009 Ueda et al.			
2006/0199538 A1	9/2006 Eisenbach	2009/0031336 A1	1/2009 Chavez et al.			
2006/0205349 A1	9/2006 Passier et al.	2009/0060219 A1	3/2009 Inohara			
2006/0222186 A1	10/2006 Paige et al.	2009/0070434 A1	3/2009 Himmelstein			
2006/0227985 A1	10/2006 Kawanami	2009/0087000 A1	4/2009 Ko			
2006/0229752 A1	10/2006 Chung	2009/0089327 A1	4/2009 Kalaboukis et al.			
2006/0259649 A1	11/2006 Hsieh et al.	2009/0097672 A1	4/2009 Buil et al.			
2006/0265571 A1	11/2006 Bosch et al.	2009/0100189 A1	4/2009 Bahren et al.			
2006/0270395 A1	11/2006 Dhawan et al.	2009/0124289 A1	5/2009 Nishida			
2006/0281409 A1	12/2006 Levien et al.	2009/0157905 A1	6/2009 Davis			
2006/0287746 A1	12/2006 Braithwaite et al.	2009/0164655 A1	6/2009 Pettersson et al.			
2006/0294569 A1	12/2006 Chung	2009/0169030 A1	7/2009 Inohara			
2007/0003067 A1	1/2007 Gierl et al.	2009/0180632 A1	7/2009 Goldberg et al.			
2007/0003075 A1	1/2007 Cooper et al.	2009/0193345 A1	7/2009 Wensley et al.			
2007/0022207 A1	1/2007 Millington et al.	2009/0222115 A1	9/2009 Malcolm et al.			
2007/0038999 A1	2/2007 Millington et al.	2009/0228897 A1	9/2009 Murray et al.			
2007/0043847 A1	2/2007 Carter et al.	2009/0228919 A1	9/2009 Zott et al.			
2007/0047712 A1	3/2007 Gross et al.	2009/0232326 A1	9/2009 Gordon et al.			
2007/0048713 A1	3/2007 Plastina et al.	2009/0251604 A1	10/2009 Iyer			
2007/0054680 A1	3/2007 Mo et al.	2010/0004983 A1	1/2010 Dickerson et al.			
2007/0071255 A1	3/2007 Schobben	2010/0010651 A1	1/2010 Kirkeby et al.			

US 11,388,532 B2

Page 9

(56)	References Cited					
U.S. PATENT DOCUMENTS						
2010/0031366 A1	2/2010 Knight et al.	2013/0290504 A1	10/2013 Quady			
2010/0049835 A1	2/2010 Ko et al.	2013/0293345 A1	11/2013 Lambourne			
2010/0052843 A1	3/2010 Cannistraro	2013/0305152 A1	11/2013 Griffiths et al.			
2010/0067716 A1	3/2010 Katayama	2014/0006483 A1	1/2014 Garmark et al.			
2010/0082784 A1	4/2010 Rosenblatt et al.	2014/0016784 A1	1/2014 Sen et al.			
2010/0087089 A1	4/2010 Struthers et al.	2014/0016786 A1	1/2014 Sen			
2010/0142735 A1	6/2010 Yoon et al.	2014/0016802 A1	1/2014 Sen			
2010/0153097 A1	6/2010 Hotho et al.	2014/0023196 A1	1/2014 Xiang et al.			
2010/0228740 A1	9/2010 Cannistraro et al.	2014/0037097 A1	2/2014 Labosco			
2010/0272270 A1	10/2010 Chaikin et al.	2014/0064501 A1	3/2014 Olsen et al.			
2010/0284389 A1	11/2010 Ramsay et al.	2014/0075308 A1	3/2014 Sanders et al.			
2010/0290643 A1	11/2010 Mihelich et al.	2014/0075311 A1	3/2014 Boettcher et al.			
2010/0299639 A1	11/2010 Ramsay et al.	2014/0079242 A1	3/2014 Nguyen et al.			
2011/0001632 A1	1/2011 Hohorst	2014/0108929 A1	4/2014 Garmark et al.			
2011/0002487 A1	1/2011 Panther et al.	2014/0112481 A1	4/2014 Li et al.			
2011/0044476 A1	2/2011 Burlingame	2014/0123005 A1	5/2014 Forstall et al.			
2011/0066943 A1	3/2011 Brillon et al.	2014/0140530 A1	5/2014 Gomes-Casseres et al.			
2011/0074794 A1	3/2011 Felt et al.	2014/0161265 A1	6/2014 Chaikin et al.			
2011/0110533 A1	5/2011 Choi et al.	2014/0181569 A1	6/2014 Millington et al.			
2011/0170710 A1	7/2011 Son	2014/0219456 A1	8/2014 Morrell et al.			
2011/0222701 A1	9/2011 Donaldson et al.	2014/0226823 A1	8/2014 Sen et al.			
2011/0228944 A1	9/2011 Croghan et al.	2014/0242913 A1	8/2014 Pang			
2011/0299696 A1	12/2011 Holmgren et al.	2014/0256260 A1	9/2014 Ueda et al.			
2011/0316768 A1	12/2011 Mcrae	2014/0267148 A1	9/2014 Luna et al.			
2012/0029671 A1	2/2012 Millington et al.	2014/0270202 A1	9/2014 Ivanov et al.			
2012/0030366 A1	2/2012 Collart et al.	2014/0273859 A1	9/2014 Luna et al.			
2012/0047435 A1	2/2012 Holladay et al.	2014/0279889 A1	9/2014 Luna			
2012/0051558 A1	3/2012 Kim et al.	2014/0285313 A1	9/2014 Luna et al.			
2012/0051567 A1	3/2012 Castor-Perry	2014/0286496 A1	9/2014 Luna et al.			
2012/0060046 A1	3/2012 Millington	2014/0294200 A1	10/2014 Baumgarte et al.			
2012/0127831 A1	5/2012 Gickhorn et al.	2014/0298174 A1	10/2014 Ikonomov			
2012/0129446 A1	5/2012 Ko et al.	2014/0323036 A1	10/2014 Daley et al.			
2012/0148075 A1	6/2012 Goh et al.	2014/0344689 A1	11/2014 Scott et al.			
2012/0185771 A1	7/2012 Rothkopf et al.	2014/0355768 A1	12/2014 Sen et al.			
2012/0192071 A1	7/2012 Millington	2014/0355794 A1	12/2014 Morrell et al.			
2012/0207290 A1	8/2012 Moyers et al.	2014/0378056 A1	12/2014 Liu			
2012/0227076 A1	9/2012 McCoy et al.	2015/0019553 A1	1/2015 Shaashua et al.			
2012/0237054 A1	9/2012 Eo et al.	2015/0019670 A1	1/2015 Redmann			
2012/0263325 A1	10/2012 Freeman et al.	2015/0026613 A1	1/2015 Kwon et al.			
2012/0281058 A1	11/2012 Laney et al.	2015/0032844 A1	1/2015 Tarr et al.			
2012/0290621 A1	11/2012 Heitz, III et al.	2015/0043736 A1	2/2015 Olsen et al.			
2013/0010970 A1	1/2013 Hegarty et al.	2015/0049248 A1	2/2015 Wang et al.			
2013/0018960 A1	1/2013 Knysz et al.	2015/0063610 A1	3/2015 Mossner			
2013/0028443 A1	1/2013 Pance et al.	2015/0074527 A1	3/2015 Sevigny et al.			
2013/0031475 A1	1/2013 Maor et al.	2015/0074528 A1	3/2015 Sakalowsky et al.			
2013/0038726 A1	2/2013 Kim	2015/0098576 A1	4/2015 Sundaresan et al.			
2013/0041954 A1	2/2013 Kim et al.	2015/0139210 A1	5/2015 Marin et al.			
2013/0047084 A1	2/2013 Sanders et al.	2015/0146886 A1	5/2015 Baumgarte			
2013/0051572 A1	2/2013 Goh et al.	2015/0201274 A1	7/2015 Ellner et al.			
2013/0052940 A1	2/2013 Brillhart et al.	2015/0256954 A1	9/2015 Carlsson et al.			
2013/0070093 A1	3/2013 Rivera et al.	2015/0281866 A1	10/2015 Williams et al.			
2013/0080599 A1	3/2013 Ko et al.	2015/0286360 A1	10/2015 Wachter et al.			
2013/0094670 A1	4/2013 Millington	2015/0304288 A1	10/2015 Balasaygun et al.			
2013/0124664 A1	5/2013 Fonseca, Jr. et al.	2015/0365987 A1	12/2015 Weel			
2013/0129122 A1	5/2013 Johnson et al.	2017/0064550 A1	3/2017 Sundaresan et al.			
2013/0132837 A1	5/2013 Mead et al.	2017/0188152 A1	6/2017 Watson et al.			
2013/0159126 A1	6/2013 Elkady	CN	1598767 A	3/2005		
2013/0167029 A1	6/2013 Friesen et al.	CN	101095372 A	12/2007		
2013/0174100 A1	7/2013 Seymour et al.	CN	101292500 A	10/2008		
2013/0174223 A1	7/2013 Dykeman et al.	CN	101785182 A	7/2010		
2013/0179163 A1	7/2013 Herbig et al.	EP	0251584 A2	1/1988		
2013/0191454 A1	7/2013 Oliver et al.	EP	0672985 A1	9/1995		
2013/0197682 A1	8/2013 Millington	EP	0772374 A2	5/1997		
2013/0208911 A1	8/2013 Millington	EP	1058985 A2	12/2000		
2013/0208921 A1	8/2013 Millington	EP	1111527 A2	6/2001		
2013/0226323 A1	8/2013 Millington	EP	1122931 A2	8/2001		
2013/0230175 A1	9/2013 Bech et al.	EP	1133896 B1	8/2002		
2013/0232416 A1	9/2013 Millington	EP	1312188 A1	5/2003		
2013/0236029 A1	9/2013 Millington	EP	1389853 A1	2/2004		
2013/0243199 A1	9/2013 Kallai et al.	EP	1135969 B1	3/2004		
2013/0253679 A1	9/2013 Lambourne	EP	1410686 A2	4/2004		
2013/0253934 A1	9/2013 Parekh et al.	EP	2713281	4/2004		
2013/0259254 A1	10/2013 Xiang et al.	EP	1517464 A2	3/2005		
2013/0279706 A1	10/2013 Marti	EP	0895427 A3	1/2006		
2013/0287186 A1	10/2013 Quady	EP	1416687 B1	8/2006		
		EP	1410686	3/2008		

FOREIGN PATENT DOCUMENTS

US 11,388,532 B2

Page 10

(56)	References Cited		
FOREIGN PATENT DOCUMENTS			
EP	2043381 A2	4/2009	Breebaart et al., "Multi-Channel Goes Mobile: MPEG Surround Binaural Rendering", AES 29th International Conference, Sep. 2-4, 2006, 1-13.
EP	2161950 A2	3/2010	Corrected Notice of Allowance dated Mar. 2015, issued in connection with U.S. Appl. No. 13/630,565, filed Sep. 28, 2012, 4 pages.
EP	1825713 B1	10/2012	European Patent Office, European Search Report dated Jul. 5, 2016, issued in connection with European Patent Application No. 16156935. 5, 9 pages.
EP	0742674 B1	4/2014	Faller, Christof, "Coding of Spatial Audio Compatible with Different Playback Formats", Audio Engineering Society Convention Paper (Presented at the 117th Convention), Oct. 28-31, 2004, 12 pages.
EP	2591617 B1	6/2014	Final Office Action dated Jul. 1, 2016, issued in connection with U.S. Appl. No. 13/458,558, filed Apr. 27, 2012, 11 pages.
EP	2860992 A1	4/2015	Final Office Action dated Jul. 2, 2015, issued in connection with U.S. Appl. No. 13/458,558, filed Apr. 27, 2012, 11 pages.
EP	2986034 B1	5/2017	Herre et al., "The Reference Model Architecture for MPEG Spatial Audio Coding", Audio Engineering Society Convention Paper (Presented at the 118th Convention), 2005, May 28-31, 13 pages.
GB	2284327 A	5/1995	ID3 tag version 2.4.0—Native Frames, Draft Specification, copyright 2000, 41 pages.
GB	2338374	12/1999	Non-Final Office Action dated Jul. 7, 2015, issued in connection with U.S. Appl. No. 14/174244, filed Feb. 6, 2014, 9 pages.
GB	2379533 A	3/2003	Non-Final Office Action dated Feb. 10, 2016, issued in connection with U.S. Appl. No. 14/937,571, filed Nov. 10, 2015, 9 pages.
GB	2486183	6/2012	Non-Final Office Action dated Jun. 13, 2016, issued in connection with U.S. Appl. No. 14/620,937, filed Feb. 12, 2015, 12 pages.
JP	63269633	11/1988	Non-Final Office Action dated Jun. 13, 2016, issued in connection with U.S. Appl. No. 15/134,761, filed Apr. 21, 2016, 10 pages.
JP	07-210129	8/1995	Non-Final Office Action dated Jul. 15, 2015, issued in connection with U.S. Appl. No. 14/174,253, filed Feb. 6, 2014, 9 pages.
JP	2000149391 A	5/2000	Non-Final Office Action dated Dec. 17, 2015, issued in connection with U.S. Appl. No. 13/458,558, filed Apr. 27, 2012, 10 pages.
JP	2001034951	2/2001	Non-Final Office Action dated Dec. 22, 2014, issued in connection with U.S. Appl. No. 13/458,558, filed Apr. 27, 2012, 11 pages.
JP	2001177890 A	6/2001	Non-Final Office Action dated Sep. 23, 2014, issued in connection with U.S. Appl. No. 13/630,565, filed Sep. 28, 2012, 7 pages.
JP	2002111817	4/2002	Non-Final Office Action dated May 24, 2016, issued in connection with U.S. Appl. No. 15/134,767, filed Apr. 21, 2016, 12 pages.
JP	2002123267 A	4/2002	Non-Final Office Action dated Jan. 29, 2016, issued in connection with U.S. Appl. No. 14/937,523, filed Nov. 10, 2015, 10 pages.
JP	2002358241 A	12/2002	Non-Final Office Action dated Jun. 29, 2016, issued in connection with U.S. Appl. No. 14/629,937, filed Feb. 24, 2015, 12 pages.
JP	2003037585	2/2003	Notice of Allowance dated Sep. 6, 2016, issued in connection with U.S. Appl. No. 15/134,767, filed Apr. 21, 2016, 7 pages.
JP	2003506765 A	2/2003	Notice of Allowance dated Mar. 10, 2016, issued in connection with U.S. Appl. No. 14/937,523, filed Nov. 10, 2015, 5 pages.
JP	2003101958	4/2003	Notice of Allowance dated Mar. 15, 2016, issued in connection with U.S. Appl. No. 14/937,571, filed Nov. 10, 2015, 5 pages.
JP	2003169089 A	6/2003	Notice of Allowance dated Aug. 19, 2016, issued in connection with U.S. Appl. No. 14/619,813, filed Feb. 11, 2015, 9 pages.
JP	2004193868 A	7/2004	Notice of Allowance dated Oct. 21, 2015, issued in connection with U.S. Appl. No. 14/174,244, filed Feb. 6, 2014, 5 pages.
JP	2005108427	4/2005	Notice of Allowance dated Oct. 21, 2015, issued in connection with U.S. Appl. No. 14/174,253, filed Feb. 6, 2014, 6 pages.
JP	2005136457	5/2005	Notice of Allowance dated Jan. 22, 2015, issued in connection with U.S. Appl. No. 13/630,565, filed Sep. 28, 2012, 7 pages.
JP	2005234929 A	9/2005	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 11: Defendants' Invalidity contentions for U.S. Pat. No. 9,219,959 filed Apr. 15, 2016, 172 pages.
JP	2007241652 A	9/2007	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 9: Defendants' Invalidity contentions for U.S. Pat. No. 9,202,509 filed Apr. 15, 2016, 163 pages.
JP	2007288405 A	11/2007	Preinterview First Office Action dated Jun. 8, 2016, issued in connection with U.S. Appl. No. 14/619,813, filed Feb. 11, 2015, 4 pages.
JP	2009506603 A	2/2009	Sonos Controller for iPad Product Guide; copyright 2004-2013; 47 pages.
JP	2009135750	6/2009	Sonos Play:3 Product Guide; copyright 2004-2011; 2 pages.
JP	2009218888	9/2009	Sonos Play:3 Product Guide; copyright 2004-2012; 14 pages.
JP	2009535708	10/2009	Sonos Play:3 Product Guide; copyright 2004-2013; 15 pages.
JP	2009538006 A	10/2009	Sonos Play:3 Teardown; https://www.ifixit.com/Teardown/Sonos+Play%3A3+Teardown/12475; 11 pages.
JP	2011010183 A	1/2011	
JP	2011130496	6/2011	
JP	2011176581	9/2011	
KR	20030011128 A	2/2003	
KR	20060030713 A	4/2006	
TW	439027	6/2001	
WO	199525313	9/1995	
WO	9709756 A2	3/1997	
WO	1999023560	5/1999	
WO	199961985	12/1999	
WO	0019693 A1	4/2000	
WO	0110125 A1	2/2001	
WO	200153994	7/2001	
WO	02073851	9/2002	
WO	03093950 A2	11/2003	
WO	03096741 A2	11/2003	
WO	2005013047	2/2005	
WO	2005013047 A2	2/2005	
WO	2007023120 A1	3/2007	
WO	2007127485	11/2007	
WO	2007131555	11/2007	
WO	2007135581 A2	11/2007	
WO	2008046530 A2	4/2008	
WO	2008082350 A1	7/2008	
WO	2008114389 A1	9/2008	
WO	2012050927	4/2012	
WO	2012137190 A1	10/2012	
WO	2013012582	1/2013	
WO	2014004182	1/2014	
WO	2014149533 A2	9/2014	
WO	2015024881 A1	2/2015	
OTHER PUBLICATIONS			
Cobranet Manual (Year: 2005)*			
Ethersound—AES (Year: 2005).*			
Ethersound-adapter (Year: 2005).*			
Advisory Action dated Oct. 5, 2015, issued in connection with U.S. Appl. No. 13/458,558, filed Apr. 27, 2012, 4 pages.			

US 11,388,532 B2

Page 11

(56)

References Cited

OTHER PUBLICATIONS

Non-Final Office Action dated Nov. 16, 2016, issued in connection with U.S. Appl. No. 15/228,639, filed Aug. 4, 2016, 15 pages.

Non-Final Office Action dated Nov. 17, 2014, issued in connection with U.S. Appl. No. 13/864,247, filed Apr. 17, 2013, 11 pages.

Non-Final Office Action dated Nov. 17, 2016, issued in connection with U.S. Appl. No. 14/620,937, filed Feb. 12, 2015, 14 pages.

Non-Final Office Action dated Feb. 18, 2009, issued in connection with U.S. Appl. No. 10/861,653, filed Jun. 5, 2004, 18 pages.

Non-Final Office Action dated Nov. 18, 2014, issued in connection with U.S. Appl. No. 13/435,739, filed Mar. 30, 2012, 10 pages.

Non-Final Office Action dated Jun. 19, 2015, issued in connection with U.S. Appl. No. 13/533,105, filed Jun. 26, 2012, 38 pages.

Non-Final Office Action dated Nov. 19, 2014, issued in connection with U.S. Appl. No. 13/848,921, filed Mar. 22, 2013, 9 pages.

Non-Final Office Action dated Aug. 20, 2009, issued in connection with U.S. Appl. No. 11/906,702, filed Oct. 2, 2007, 27 pages.

Non-Final Office Action dated Sep. 21, 2016, issued in connection with U.S. Appl. No. 15/080,591, filed Mar. 25, 2016, 9 pages.

Non-Final Office Action dated Sep. 21, 2016, issued in connection with U.S. Appl. No. 15/080,716, filed Mar. 25, 2016, 8 pages.

Non-Final Office Action dated Sep. 21, 2016, issued in connection with U.S. Appl. No. 15/088,283, filed Apr. 1, 2016, 8 pages.

Non-Final Office Action dated Sep. 21, 2016, issued in connection with U.S. Appl. No. 15/088,532, filed Apr. 1, 2016, 9 pages.

Non-Final Office Action dated Sep. 22, 2016, issued in connection with U.S. Appl. No. 15/088,906, filed Apr. 1, 2016, 9 pages.

Non-Final Office Action dated Sep. 22, 2016, issued in connection with U.S. Appl. No. 15/155,149, filed May 16, 2016, 7 pages.

Non-Final Office Action dated Jun. 23, 2015, issued in connection with U.S. Appl. No. 13/705,176, filed Dec. 5, 2012, 30 pages.

Non-Final Office Action dated Oct. 23, 2014, issued in connection with U.S. Appl. No. 13/848,904, filed Mar. 22, 2013, 11 pages.

Non-Final Office Action dated Oct. 23, 2014, issued in connection with U.S. Appl. No. 13/864,251, filed Apr. 17, 2013, 11 pages.

Non-Final Office Action dated Oct. 23, 2014, issued in connection with U.S. Appl. No. 13/888,203, filed May 6, 2013, 9 pages.

Non-Final Office Action dated Oct. 24, 2014, issued in connection with U.S. Appl. No. 13/435,776, filed Mar. 30, 2012, 14 pages.

Non-Final Office Action dated Feb. 26, 2015, issued in connection with U.S. Appl. No. 14/186,850, filed Feb. 21, 2014, 25 pages.

Non-Final Office Action dated Mar. 26, 2015, issued in connection with U.S. Appl. No. 14/184528, filed Feb. 19, 2014, 18 pages.

Non-Final Office Action dated Jun. 27, 2008, issued in connection with U.S. Appl. No. 10/861,653, filed Jun. 5, 2004, 19 pages.

Non-Final Office Action dated Mar. 27, 2015, issued in connection with U.S. Appl. No. 13/705,178, filed Dec. 5, 2012, 14 pages.

Non-Final Office Action dated Dec. 28, 2015, issued in connection with U.S. Appl. No. 14/290,493, filed May 29, 2014, 29 pages.

Non-Final Office Action dated Dec. 28, 2016, issued in connection with U.S. Appl. No. 15/343,000, filed Nov. 3, 2016, 11 pages.

Non-Final Office Action dated Apr. 30, 2012, issued in connection with U.S. Appl. No. 13/204,511, filed Aug. 5, 2011, 16 pages.

Non-Final Office Action dated Jan. 30, 2015, issued in connection with U.S. Appl. No. 14/504,812, filed Oct. 2, 2014, 13 pages.

Non-Final Office Action dated Jan. 30, 2015, issued in connection with U.S. Appl. No. 14/290,493, filed May 29, 2014, 30 pages.

Non-Final Office Action dated Nov. 30, 2016, issued in connection with U.S. Appl. No. 15/243,186, filed Aug. 22, 2016, 12 pages.

Non-Final Office Action dated Sep. 30, 2016, issued in connection with U.S. Appl. No. 13/864,249, filed Apr. 17, 2013, 12 pages.

North American MPEG-2 Information, "The MPEG-2 Transport Stream," Retrieved from the Internet:, 2006, pp. 1-5.

Notice of Allowance dated Jan. 31, 2013, issued in connection with U.S. Appl. No. 13/298,090, filed Nov. 16, 2011, 19 pages.

Notice of Allowance dated Dec. 1, 2016, issued in connection with U.S. Appl. No. 15/088,283, filed Apr. 1, 2016, 9 pages.

Notice of Allowance dated Dec. 2, 2016, issued in connection with U.S. Appl. No. 15/088,532, filed Apr. 1, 2016, 9 pages.

Notice of Allowance dated Dec. 2, 2016, issued in connection with U.S. Appl. No. 15/088,678, filed Apr. 1, 2016, 9 pages.

Notice of Allowance dated Dec. 2, 2016, issued in connection with U.S. Appl. No. 15/089,758, filed Apr. 4, 2016, 9 pages.

Notice of Allowance dated Dec. 2, 2016, issued in connection with U.S. Appl. No. 15/155,149, filed May 16, 2016, 9 pages.

Notice of Allowance dated Jul. 2, 2015, issued in connection with U.S. Appl. No. 13/848,904, filed Mar. 22, 2013, 17 pages.

Notice of Allowance dated Jul. 2, 2015, issued in connection with U.S. Appl. No. 13/888,203, filed May 6, 2013, 19 pages.

Notice of Allowance dated Jul. 2, 2015, issued in connection with U.S. Appl. No. 14/184,935, filed Feb. 20, 2014, 23 pages.

Notice of Allowance dated Sep. 3, 2015, issued in connection with U.S. Appl. No. 13/705,174, filed Dec. 5, 2012, 4 pages.

Notice of Allowance dated Aug. 4, 2015, issued in connection with U.S. Appl. No. 14/516,867, filed Oct. 17, 2014, 13 pages.

Notice of Allowance dated Oct. 5, 2012, issued in connection with U.S. Appl. No. 13/204,511, filed Aug. 5, 2011, 11 pages.

Notice of Allowance dated Mar. 6, 2014, issued in connection with U.S. Appl. No. 13/827,653, filed Mar. 14, 2013, 17 pages.

Notice of Allowance dated May 6, 2011, issued in connection with U.S. Appl. No. 11/801,468, filed May 9, 2007, 10 pages.

Notice of Allowance dated Sep. 6, 2013, issued in connection with U.S. Appl. No. 13/619,237, filed Sep. 14, 2012, 10 pages.

Notice of Allowance dated Apr. 7, 2016, issued in connection with U.S. Appl. No. 13/533,105, filed Jun. 26, 2012, 40 pages.

Notice of Allowance dated Oct. 7, 2015, issued in connection with U.S. Appl. No. 14/184526, filed Feb. 19, 2014, 7 pages.

Notice of Allowance dated Oct. 9, 2015, issued in connection with U.S. Appl. No. 13/435,739, filed Mar. 30, 2012, 4 pages.

Notice of Allowance dated Aug. 10, 2015, issued in connection with U.S. Appl. No. 13/848,904, filed Mar. 22, 2013, 9 pages.

Advisory Action dated Oct. 6, 2016, issued in connection with U.S. Appl. No. 13/458,558, filed Apr. 27, 2012, 4 pages.

European Patent Office, Extended European Search Report dated Jul. 5, 2016, issued in connection with European Patent Application No. 16156940.5, 7 pages.

Japanese Patent Office, Office Action dated Nov. 1, 2016, issued in connection with Japanese Application No. 2015-238682, 5 pages.

Non-Final Office Action dated Oct. 12, 2016, issued in connection with U.S. Appl. No. 14/505,966, filed Oct. 3, 2014, 10 pages.

Non-Final Office Action dated Oct. 20, 2016, issued in connection with U.S. Appl. No. 14/563,515, filed Dec. 8, 2014, 10 pages.

Non-Final Office Action dated Sep. 27, 2016, issued in connection with U.S. Appl. No. 15/228,685, filed Aug. 4, 2016, 8 pages.

Non-Final Office Action dated Oct. 31, 2016, issued in connection with U.S. Appl. No. 14/806,070, filed Jul. 22, 2015, 11 pages.

Notice of Allowance dated Oct. 24, 2016, issued in connection with U.S. Appl. No. 15/134,761, filed Apr. 21, 2016, 7 pages.

Notice of Allowance dated Oct. 24, 2016, issued in connection with U.S. Appl. No. 15/134,767, filed Apr. 21, 2016, 7 pages.

Reexam Non-Final Office Action dated Oct. 17, 2016, issued in connection with U.S. Appl. No. 30/013,756, filed May 25, 2016, 31 pages.

Anonymous, "Information technology—Generic coding of moving pictures and associated audio information—Part 3: Audio," ISO/IEC 13818-3, Apr. 1998, pp. 15.

Anonymous, "Transmission Control Protocol," RFC: 793, USC/Information Sciences Institute, Sep. 1981, 91 pages.

Buerk et al., "AVTransport:1 Service Template Version 1.01," Contributing Members of the UPnP Forum, Jun. 25, 2002, 67 pages.

Kou et al., "RenderingControl:1 Service Template Verion 1.01," Contributing Members of the UPnP Forum, Jun. 25, 2002, 63 pages.

Postel, J., "User Datagram Protocol," RFC: 768, USC/Information Sciences Institute, Aug. 1980, 3 pages.

Ritchie et al., "MediaServer:1 Device Template Version 1.01," Contributing Members of the UPnP Forum, Jun. 25, 2002, 12 pages.

Ritchie et al., "UPnP AV Architecture:1, Version 1.0," Contributing Members of the UPnP Forum, Jun. 25, 2002, 22 pages.

Ritchie, John, "MediaRenderer:1 Device Template Version 1.01," Contributing Members of the UPnP Forum, Jun. 25, 2002, 12 pages.

US 11,388,532 B2

Page 12

(56)

References Cited

OTHER PUBLICATIONS

Schulzrinne et al., "RTP: A Transport Protocol for Real-Time Applications," Network Working Group, RFC: 3550, Standards Track, Jul. 2003, 104 pages.

Sonos Digital Music System User Guide, Version: Aug. 1, 2005, Aug. 2005, 114 pages.

Sonos Multi-Room Music System User Guide, Version: Oct. 1, 2009, 2009, 299 pages.

Advisory Action dated Feb. 2, 2016, issued in connection with U.S. Appl. No. 13/848,921, filed Mar. 22, 2013, 8 pages.

Advisory Action dated Sep. 18, 2008, issued in connection with U.S. Appl. No. 10/816,217, filed Apr. 31, 2004, 8 pages.

Advisory Action dated Feb. 1, 2016, issued in connection with U.S. Appl. No. 13/864,247, filed Apr. 17, 2013, 6 pages.

Advisory Action dated Jun. 1, 2015, issued in connection with U.S. Appl. No. 14/516,867, filed Oct. 17, 2014, 11 pages.

Advisory Action dated Mar. 2, 2015, issued in connection with U.S. Appl. No. 13/848,932, filed Mar. 22, 2013, 3 pages.

Advisory Action dated Jan. 5, 2012, issued in connection with U.S. Appl. No. 12/035,112, filed Feb. 21, 2008, 3 pages.

Advisory Action dated Sep. 5, 2014, issued in connection with U.S. Appl. No. 13/907,666, filed May 31, 2013, 3 pages.

Advisory Action dated Jan. 8, 2015, issued in connection with U.S. Appl. No. 13/705,176, filed Dec. 5, 2012, 4 pages.

Advisory Action dated Jun. 9, 2016, issued in connection with U.S. Appl. No. 13/871,795, filed Apr. 25, 2013, 14 pages.

Advisory Action dated Feb. 10, 2016, issued in connection with U.S. Appl. No. 13/871,795, filed Apr. 26, 2013, 3 pages.

Advisory Action dated Nov. 12, 2014, issued in connection with U.S. Appl. No. 13/907,666, filed May 31, 2013, 6 pages.

Advisory Action dated Apr. 15, 2015, issued in connection with U.S. Appl. No. 14/184,526, filed Feb. 19, 2014, 9 pages.

Advisory Action dated Apr. 15, 2015, issued in connection with U.S. Appl. No. 14/184,935, filed Feb. 20, 2014, 9 pages.

Advisory Action dated Mar. 25, 2015, issued in connection with U.S. Appl. No. 13/533,105, filed Jun. 26, 2012, 5 pages.

Advisory Action dated Feb. 26, 2015, issued in connection with U.S. Appl. No. 14/184,528, filed Feb. 19, 2014, 3 pages.

Advisory Action dated Nov. 26, 2014, issued in connection with U.S. Appl. No. 14/186,850, filed Feb. 21, 2014, 9 pages.

Advisory Action dated Jul. 28, 2015, issued in connection with U.S. Appl. No. 14/184,522, filed Feb. 19, 2014, 7 pages.

Advisory Action dated Sep. 28, 2009, issued in connection with U.S. Appl. No. 10/816,217, filed Apr. 1, 2004, 4 pages.

Baldwin, Roberto. "How-To: Setup iTunes DJ on Your Mac and iPhone", available at http://www.maclife.com/article/howtos/howto_setup_itunes_dj_your_mac_and_iphone, archived on Mar. 17, 2009, 4 pages.

Baudisch et al., "Flat Volume Control: Improving Usability by Hiding the Volume Control Hierarchy in the User Interface," 2004, 8 pages.

Benslimane Abderrahim, "A Multimedia Synchronization Protocol for Multicast Groups," Proceedings of the 26th Euromicro Conference, 2000, pp. 456-463, vol. 1.

Biersack et al., "Intra- and Inter-Stream Synchronization for Stored Multimedia Streams," IEEE International Conference on Multimedia Computing and Systems, 1996, pp. 372-381.

Blakowski G. et al., "A Media Synchronization Survey: Reference Model, Specification, and Case Studies," Jan. 1996, pp. 5-35, vol. 14, No. 1.

Bretl W.E., et al., MPEG2 Tutorial [online], 2000 [retrieved on Jan. 13, 2009] Retrieved from the Internet.; pp. 1-23.

Canadian Intellectual Property Office, Canadian Office Action dated Apr. 4, 2016, issued in connection with Canadian Patent Application No. 2,842,342, 5 pages.

Canadian Intellectual Property Office, Canadian Office Action dated Sep. 14, 2015, issued in connection with Canadian Patent Application No. 2,842,342, 2 pages.

Chakrabarti et al., "A Remotely Controlled Bluetooth Enabled Environment," IEEE, 2004, pp. 77-81.

Chinese Patent Office, Office Action dated Jul. 5, 2016, issued in connection with Chinese Patent Application No. 201380044380.2, 25 pages.

Corrected Notice of Allowance dated Aug. 19, 2015, issued in connection with U.S. Appl. No. 13/907,666, filed May 31, 2013, 2 pages.

Creative, "Connecting Bluetooth Devices with Creative D200," <http://support.creative.com/kb>ShowArticle.aspx?url=http://ask.creative.com:80/SRVS/CGI-BIN/WEBCGI.EXE./?St=106,E=000000000396859016,K=9377,Sxi=8,VARSET=ws:http://us.creative.com,case=63350>>, available on Nov. 28, 2011, 2 pages.

Crown PIP Manual available for sale at least 2004, 68 pages.

European Patent Office, European Extended Search Report dated Feb. 28, 2014, issued in connection with EP Application No. 13184747.7, 8 pages.

European Patent Office, European Extended Search Report dated Mar. 7, 2016, issued in connection with EP Application No. 13810340, 3, 9 pages.

European Patent Office, European Extended Search Report dated Mar. 31, 2015, issued in connection with EP Application No. 14181454.1, 9 pages.

European Patent Office, Examination Report dated Mar. 22, 2016, issued in connection with European Patent Application No. EP14181454.1, 6 pages.

European Patent Office, Examination Report dated Oct. 24, 2016, issued in connection with European Patent Application No. 13808623, 6, 4 pages.

Falcone, John, "Sonos BU150 Digital Music System review," CNET, CNET [online] Jul. 27, 2009 [retrieved on Mar. 16, 2016], 11 pages Retrieved from the Internet: URL:<http://www.cnet.com/products/sonos-bu150-digital-music-system/>.

File History of Re-Examination U.S. Appl. No. 90/013,423 (Sonos Ref. No. 12-0902-REX) retrieved from the U.S. Patent Office on Dec. 5, 2016, 313 pages.

Final Office Action dated Jun. 5, 2014, issued in connection with U.S. Appl. No. 13/907,666, filed May 31, 2013, 12 pages.

Final Office Action dated Jul. 13, 2009, issued in connection with U.S. Appl. No. 10/816,217, filed Apr. 1, 2004, 16 pages.

Final Office Action dated Sep. 13, 2012, issued in connection with U.S. Appl. No. 13/297,000, filed Nov. 15, 2011, 17 pages.

Final Office Action dated Nov. 18, 2015, issued in connection with U.S. Appl. No. 13/533,105, filed Jun. 26, 2012, 56 pages.

Final Office Action dated Oct. 21, 2011, issued in connection with U.S. Appl. No. 10/816,217, filed Apr. 31, 2004, 19 pages.

Final Office Action dated Mar. 27, 2014, issued in connection with U.S. Appl. No. 13/533,105, filed Jun. 26, 2012, 29 pages.

Final Office Action dated Jan. 28, 2011, issued in connection with U.S. Appl. No. 10/816,217, filed Apr. 1, 2004, 21 pages.

Final Office Action dated Jun. 30, 2008, issued in connection with U.S. Appl. No. 10/816,217, filed Apr. 1, 2004, 30 pages.

Final Office Action dated Aug. 3, 2015, issued in connection with U.S. Appl. No. 13/848,921, filed Mar. 22, 2013, 13 pages.

Final Office Action dated Dec. 3, 2014, issued in connection with U.S. Appl. No. 14/184,528, filed Feb. 19, 2014, 12 pages.

Final Office Action dated Jul. 3, 2012, issued in connection with U.S. Appl. No. 13/298,090, filed Nov. 16, 2011, 41 pages.

Final Office Action dated Jun. 3, 2016, issued in connection with U.S. Appl. No. 13/705,176, filed Dec. 5, 2012, 24 pages.

Final Office Action dated Mar. 3, 2015, issued in connection with U.S. Appl. No. 13/864,251, filed Apr. 17, 2013, 13 pages.

Final Office Action dated Mar. 4, 2015, issued in connection with U.S. Appl. No. 13/848,904, filed Mar. 22, 2013, 16 pages.

Final Office Action dated Mar. 5, 2015, issued in connection with U.S. Appl. No. 13/888,203, filed May 6, 2013, 13 pages.

Final Office Action dated Jan. 7, 2015, issued in connection with U.S. Appl. No. 13/848,932, filed Mar. 22, 2013, 14 pages.

Final Office Action dated Mar. 9, 2015, issued in connection with U.S. Appl. No. 14/516,867, filed Oct. 17, 2014, 14 pages.

Final Office Action dated Aug. 10, 2015, issued in connection with U.S. Appl. No. 14/290,493, filed May 29, 2014, 26 pages.

Final Office Action dated Aug. 11, 2015, issued in connection with U.S. Appl. No. 13/864,247, filed Apr. 17, 2013, 15 pages.

US 11,388,532 B2

Page 13

(56)

References Cited**OTHER PUBLICATIONS**

Final Office Action dated Feb. 11, 2015, issued in connection with U.S. Appl. No. 14/184,526, filed Feb. 19, 2014, 13 pages.

Final Office Action dated Feb. 11, 2015, issued in connection with U.S. Appl. No. 14/184,935, filed Feb. 20, 2014, 17 pages.

Final Office Action dated Feb. 12, 2015, issued in connection with U.S. Appl. No. 14/184,522, filed Feb. 19, 2014, 20 pages.

Final Office Action dated Dec. 13, 2016, issued in connection with U.S. Appl. No. 14/629,937, filed Feb. 24, 2015, 14 pages.

Final Office Action dated Oct. 13, 2011, issued in connection with U.S. Appl. No. 12/035,112, filed Feb. 21, 2008, 10 pages.

Final Office Action dated Jul. 15, 2015, issued in connection with U.S. Appl. No. 14/504,812, filed on Oct. 2, 2014, 18 pages.

Final Office Action dated Jun. 15, 2015, issued in connection with U.S. Appl. No. 14/184,522, filed Feb. 19, 2014, 25 pages.

Final Office Action dated Dec. 17, 2014, issued in connection with U.S. Appl. No. 13/533,105, filed Jun. 26, 2012, 36 pages.

Final Office Action dated Oct. 19, 2016, issued in connection with U.S. Appl. No. 13/848,921, filed Mar. 22, 2013, 14 pages.

Final Office Action dated Jan. 21, 2010, issued in connection with U.S. Appl. No. 11/906,702, filed Oct. 2, 2007, 27 pages.

Final Office Action dated Oct. 22, 2014, issued in connection with U.S. Appl. No. 14/186,850, filed Feb. 21, 2014, 12 pages.

Final Office Action dated Oct. 23, 2014, issued in connection with U.S. Appl. No. 13/705,176, filed Dec. 5, 2012, 23 pages.

Final Office Action dated Feb. 24, 2016, issued in connection with U.S. Appl. No. 13/871795, filed Apr. 26, 2013, 28 pages.

Final Office Action dated May 25, 2016, issued in connection with U.S. Appl. No. 14/290,493, filed May 29, 2014, 33 pages.

Final Office Action dated Apr. 28, 2015, issued in connection with U.S. Appl. No. 14/186,850, filed Feb. 21, 2014, 20 pages.

Final Office Action dated Nov. 30, 2015, issued in connection with U.S. Appl. No. 13/871,795, filed Apr. 26, 2013, 26 pages.

First Action Interview Office Action Summary dated Apr. 15, 2015, issued in connection with U.S. Appl. No. 14/505,027, filed Oct. 2, 2014, 6 pages.

Fulton et al., "The Network Audio System: Make Your Application Sing (As Well as Dance)!" The X Resource, 1994, 14 pages.

Hans et al., "Interacting with Audio Streams for Entertainment and Communication," Proceedings of the Eleventh ACM International Conference on Multimedia, ACM, 2003, 7 pages.

Horwitz, Jeremy, "Logic3 i-Station25," retrieved from the internet: <http://www.ilounge.com/index.php/reviews/entry/logic3-i-station25/>, last visited Dec. 17, 2013, 5 pages.

Huang C.M., et al., "A Synchronization Infrastructure for Multicast Multimedia at the Presentation Layer," IEEE Transactions on Consumer Electronics, 1997, pp. 370-380, vol. 43, No. 3.

International Bureau, International Preliminary Report on Patentability, dated Jan. 8, 2015, issued in connection with International Application No. PCT/US2013/046372, filed on Jun. 18, 2013, 6 pages.

International Bureau, International Preliminary Report on Patentability, dated Jan. 8, 2015, issued in connection with International Application No. PCT/US2013/046386, filed on Jun. 18, 2013, 8 pages.

International Bureau, International Preliminary Report on Patentability dated Jan. 30, 2014, issued in connection with International Application No. PCT/US2012/045894, filed on Jul. 9, 2012, 6 pages.

International Searching Authority, International Search Report dated Aug. 1, 2008, in connection with International Application No. PCT/US2004/023102, 5 pages.

International Searching Authority, International Search Report dated Aug. 26, 2013, issued in connection with International Application No. PCT/US2013/046372, filed on Jun. 18, 2013, 3 pages.

International Searching Authority, International Search Report dated Dec. 26, 2012, issued in connection with International Application No. PCT/US2012/045894, filed on Jul. 9, 2012, 3 pages.

International Searching Authority, International Search Report dated Sep. 30, 2013, issued in connection with International Application No. PCT/US2013/046386, filed on Jun. 18, 2013, 3 pages.

International Searching Authority, Written Opinion dated Aug. 26, 2013, issued in connection with International Application No. PCT/US2013/046372, filed on Jun. 18, 2013, 4 pages.

International Searching Authority, Written Opinion dated Dec. 26, 2012, issued in connection with International Application No. PCT/US2012/045894, filed on Jul. 9, 2012, 4 pages.

International Searching Authority, Written Opinion dated Sep. 30, 2013, issued in connection with International Application No. PCT/US2013/046386, filed on Jun. 18, 2013, 6 pages.

Ishibashi et al., "A Group Synchronization Mechanism for Live Media in Multicast Communications," IEEE Global Telecommunications Conference, 1997, pp. 746-752, vol. 2.

Ishibashi et al., "A Group Synchronization Mechanism for Stored Media in Multicast Communications," IEEE Information Revolution and Communications, 1997, pp. 692-700, vol. 2.

Japanese Patent Office, Decision of Rejection dated Jul. 8, 2014, issued in connection with Japanese Patent Application No. 2012-178711, 3 pages.

Japanese Patent Office, Notice of Rejection, dated Feb. 3, 2015, issued in connection with Japanese Patent Application No. 2014-521648, 7 pages.

Japanese Patent Office, Notice of Rejection dated Sep. 15, 2015, issued in connection with Japanese Patent Application No. 2014-220704, 7 pages.

Japanese Patent Office, Office Action dated May 24, 2016, issued in connection with Japanese Patent Application No. 2014-220704, 7 pages.

Japanese Patent Office, Office Action dated Mar. 29, 2016, issued in connection with Japanese Patent Application No. JP2015-520288, 12 pages.

Japanese Patent Office, Office Action Summary dated Feb. 2, 2016, issued in connection with Japanese Patent Application No. 2015-520286, 6 pages.

Japanese Patent Office, Office Action Summary dated Nov. 19, 2013, issued in connection with Japanese Patent Application No. 2012-178711, 5 pages.

Levergood et al., "AudioFile: A Network-Transparent System for Distributed Audio Applications," Digital Equipment Corporation, 1993, 109 pages.

Manictools, "Identify Duplicate Files by Sound," Sep. 28, 2010, <http://www.manictools.com/soft/music-duplicate-remover/identify-duplicate-files-by-sound.shtml>.

Mills, David L., "Precision Synchronization of Computer Network Clocks," ACM SIGCOMM Computer Communication Review, 1994, pp. 28-43, vol. 24, No. 2.

Notice of Allowance dated Nov. 10, 2011, issued in connection with U.S. Appl. No. 11/906,702, filed Oct. 2, 2007, 17 pages.

Notice of Allowance dated Apr. 11, 2016, issued in connection with U.S. Appl. No. 13/864,247, filed Apr. 17, 2013, 21 pages.

Notice of Allowance dated Jan. 11, 2016, issued in connection with U.S. Appl. No. 14/565,544, filed Dec. 9, 2014, 5 pages.

Notice of Allowance dated Aug. 12, 2015, issued in connection with U.S. Appl. No. 13/435,739, filed Mar. 30, 2012, 27 pages.

Notice of Allowance dated Jul. 13, 2015, issued in connection with U.S. Appl. No. 14/184,526, filed Feb. 19, 2014, 22 pages.

Notice of Allowance dated Nov. 13, 2013, issued in connection with U.S. Appl. No. 13/724,048, filed Dec. 21, 2012, 7 pages.

Notice of Allowance dated Oct. 13, 2015, issued in connection with U.S. Appl. No. 13/864,251, filed Apr. 17, 2013, 7 pages.

Notice of Allowance dated Jun. 14, 2012, issued in connection with U.S. Appl. No. 12/035,112, filed Feb. 21, 2008, 9 pages.

Notice of Allowance dated Jul. 15, 2015, issued in connection with U.S. Appl. No. 13/705,174, filed Dec. 5, 2012, 18 pages.

Notice of Allowance dated Jun. 16, 2009, issued in connection with U.S. Appl. No. 10/861,653, filed Jun. 5, 2004, 11 pages.

Notice of Allowance dated Jul. 17, 2015, issued in connection with U.S. Appl. No. 13/864,251, filed Apr. 17, 2013, 20 pages.

Notice of Allowance dated May 19, 2015, issued in connection with U.S. Appl. No. 13/907,666, filed May 31, 2013, 7 pages.

US 11,388,532 B2

Page 14

(56)

References Cited**OTHER PUBLICATIONS**

Notice of Allowance dated Oct. 19, 2016, issued in connection with U.S. Appl. No. 14/290,493, filed May 29, 2014, 14 pages.

Notice of Allowance dated Sep. 21, 2015, issued in connection with U.S. Appl. No. 13/297,000, filed Nov. 15, 2011, 11 pages.

Notice of Allowance dated Sep. 22, 2015, issued in connection with U.S. Appl. No. 13/888,203, filed May 6, 2013, 7 pages.

Notice of Allowance dated Sep. 24, 2015, issued in connection with U.S. Appl. No. 13/705,174, filed Dec. 5, 2012, 7 pages.

Notice of Allowance dated Sep. 24, 2015, issued in connection with U.S. Appl. No. 14/184,935, filed Feb. 20, 2014, 7 pages.

Notice of Allowance dated Sep. 25, 2014, issued in connection with U.S. Appl. No. 14/176,808, filed Feb. 10, 2014, 5 pages.

Notice of Allowance dated Aug. 27, 2015, issued in connection with U.S. Appl. No. 13/705,177, filed Dec. 5, 2012, 34 pages.

Notice of Allowance dated Aug. 27, 2015, issued in connection with U.S. Appl. No. 14/505,027, filed Oct. 2, 2014, 18 pages.

Notice of Allowance dated Dec. 27, 2011, issued in connection with U.S. Appl. No. 10/816,217, filed Apr. 1, 2004, 15 pages.

Notice of Allowance dated Jul. 29, 2015, issued in connection with U.S. Appl. No. 13/359,976, filed Jan. 27, 2012, 28 pages.

Notice of Allowance dated Jul. 29, 2015, issued in connection with U.S. Appl. No. 14/186,850, filed Feb. 21, 2014, 9 pages.

Notice of Allowance dated Aug. 30, 2016, issued in connection with U.S. Appl. No. 14/290,493, filed May 29, 2014, 7 pages.

Notice of Allowance dated Jul. 30, 2015, issued in connection with U.S. Appl. No. 13/705,178, filed Dec. 5, 2012, 18 pages.

Notice of Allowance dated Aug. 5, 2015, issued in connection with U.S. Appl. No. 13/435,776, filed Mar. 30, 2012, 26 pages.

Notice of Allowance dated Jul. 6, 2015, issued in connection with U.S. Appl. No. 13/297,000, filed Nov. 15, 2011, 24 pages.

Nutzel et al., "Sharing Systems for Future HiFi Systems," IEEE, 2004, 9 pages.

Park et al., "Group Synchronization in MultiCast Media Communications," Proceedings of the 5th Research on Multicast Technology Workshop, 2003, 5 pages.

Pre-Interview First Office Action dated Mar. 10, 2015, issued in connection with U.S. Appl. No. 14/505,027, filed Oct. 2014, 4 pages.

PRISMIQ, Inc., "PRISMIQ Media Player User Guide," 2003, 44 pages.

Re-Exam Final Office Action dated Aug. 5, 2015, issued in connection with U.S. Appl. No. 30/013,423, filed Jan. 5, 2015, 25 pages.

Re-Exam Non-Final Office Action dated Apr. 22, 2015, issued in connection with U.S. Appl. No. 30/013,423, filed Jan. 5, 2015, 16 pages.

Renkus Heinz Manual; available for sale at least 2004, 6 pages.

Roland Corporation, "Roland announces BA-55 Portable PA System," press release, Apr. 6, 2011, 2 pages.

Rothermel et al., "An Adaptive Stream Synchronization Protocol," 5th International Workshop on Network and Operating System Support for Digital Audio and Video, 1995, 13 pages.

Schmandt et al., "Impromptu: Managing Networked Audio Applications for Mobile Users," 2004, 11 pages.

Schulzrinne H., et al., "RIP: A Transport Protocol for Real-Time Applications, RFC 3550," Network Working Group, 2003, pp. 1-89.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 1: Defendants' Invalidity contentions for U.S. Pat. No. 7,571,014 filed Sep. 16, 2016, 270 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 10: Defendants' Invalidity contentions for U.S. Pat. No. 9,219,959 filed Sep. 27, 2016, 236 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 11: Defendants' Invalidity contentions for U.S. Design Pat. No. D559,197 filed Sep. 27, 2016, 52 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 2: Defendants' Invalidity contentions for U.S. Pat. No. 8,588,949 filed Sep. 27, 2016, 224 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 3: Defendants' Invalidity contentions for U.S. Pat. No. 8,843,224 filed Sep. 27, 2016, 147 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 4: Defendants' Invalidity contentions for U.S. Pat. No. 8,938,312 filed Sep. 27, 2016, 229 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 5: Defendants' Invalidity Contentions for U.S. Pat. No. 8,938,637 filed Sep. 27, 2016, 213 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 6: Defendants' Invalidity Contentions for U.S. Pat. No. 9,042,556 filed Sep. 27, 2016, 162 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 7: Defendants' Invalidity Contentions for U.S. Pat. No. 9,195,258 filed Sep. 27, 2016, 418 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 8: Defendants' Invalidity Contentions for U.S. Pat. No. 9,202,509 filed Sep. 27, 2016, 331 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 9: Defendants' Invalidity Contentions for U.S. Pat. No. 9,213,357 filed Sep. 27, 2016, 251 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendants' Brief in Support of their Motion for Leave to Amend their Answer to Add the Defense of Inequitable Conduct, provided Oct. 12, 2016, 24 pages.

Motorola, "Simplefi, Wireless Digital Audio Receiver, Installation and User Guide," Dec. 31, 2001, 111 pages.

Nilsson, M., "ID3 Tag Version 2," Mar. 26, 1998, 28 pages.

Non-Final Office Action dated May 1, 2014, issued in connection with U.S. Appl. No. 14/184,522, filed Feb. 19, 2014, 31 pages.

Non-Final Office Action dated Dec. 5, 2013, issued in connection with U.S. Appl. No. 13/827,653, filed Mar. 14, 2013, 28 pages.

Non-Final Office Action dated Jan. 5, 2012, issued in connection with U.S. Appl. No. 13/298,090, filed Nov. 16, 2011, 35 pages.

Non-Final Office Action dated May 6, 2014, issued in connection with U.S. Appl. No. 13/705,176, filed Dec. 5, 2012, 23 pages.

Non-Final Office Action dated Sep. 7, 2016, issued in connection with U.S. Appl. No. 13/864,248, filed Apr. 17, 2013, 12 pages.

Non-final Office Action dated Apr. 10, 2013, issued in connection with U.S. Appl. No. 13/619,237, filed Sep. 14, 2012, 10 pages.

Non-Final Office Action dated May 12, 2014, issued in connection with U.S. Appl. No. 14/184,528, filed Feb. 19, 2014, 23 pages.

Non-Final Office Action dated May 14, 2014, issued in connection with U.S. Appl. No. 13/848,932, filed Mar. 22, 2013, 14 pages.

Non-Final Office Action dated Jun. 17, 2014, issued in connection with U.S. Appl. No. 14/176,808, filed Feb. 10, 2014, 6 pages.

Non-Final Office Action dated Dec. 18, 2013, issued in connection with U.S. Appl. No. 13/907,666, filed May 31, 2013, 12 pages.

Non-Final Office Action dated Jan. 18, 2008, issued in connection with U.S. Appl. No. 10/816,217, filed Apr. 1, 2004, 28 pages.

Non-Final Office Action dated Apr. 19, 2010, issued in connection with U.S. Appl. No. 11/801,468, filed May 9, 2007, 16 pages.

Non-Final Office Action dated Mar. 19, 2013, issued in connection with U.S. Appl. No. 13/724,048, filed Dec. 21, 2012, 9 pages.

Non-Final Office Action dated Jun. 21, 2011, issued in connection with U.S. Appl. No. 10/816,217, filed Apr. 1, 2004, 13 pages.

Non-Final Office Action dated Jan. 22, 2009, issued in connection with U.S. Appl. No. 10/816,217, filed Apr. 1, 2004, 18 pages.

Non-Final Office Action dated Jul. 25, 2014, issued in connection with U.S. Appl. No. 14/184,526, filed Feb. 19, 2014, 9 pages.

Non-Final Office Action dated Jul. 25, 2014, issued in connection with U.S. Appl. No. 14/184,935, filed Feb. 20, 2014, 11 pages.

Non-Final Office Action dated Jun. 25, 2010, issued in connection with U.S. Appl. No. 10/816,217, filed Apr. 1, 2004, 17 pages.

Non-Final Office Action dated Nov. 25, 2013, issued in connection with U.S. Appl. No. 13/533,105, filed Jun. 26, 2012, 19 pages.

Non-Final Office Action dated May 27, 2014, issued in connection with U.S. Appl. No. 14/186,850, filed Feb. 21, 2014, 13 pages.

Non-Final Office Action dated Feb. 29, 2012, issued in connection with U.S. Appl. No. 13/297,000, filed Nov. 15, 2011, 10 pages.

Non-Final Office Action dated Nov. 29, 2010, issued in connection with U.S. Appl. No. 11/801,468, filed May 9, 2007, 17 pages.

US 11,388,532 B2

Page 15

(56)

References Cited

OTHER PUBLICATIONS

Non-Final Office Action dated Jul. 30, 2013 issued in connection with U.S. Appl. No. 13/724,048, filed Dec. 21, 2012, 7 pages.

Non-Final Office Action dated Jul. 31, 2014, issued in connection with U.S. Appl. No. 13/533,105, filed Jun. 26, 2012, 31 pages.

Non-Final Office Action dated Dec. 1, 2014, issued in connection with U.S. Appl. No. 14/516,867, filed Oct. 17, 2014, 11 pages.

Non-Final Office Action dated Jun. 1, 2016, issued in connection with U.S. Appl. No. 14/184,522, filed Feb. 19, 2014, 21 pages.

Non-Final Office Action dated Jan. 3, 2017, issued in connection with U.S. Appl. No. 14/808,397, filed Jul. 24, 2015, 11 pages.

Non-Final Office Action dated Jun. 3, 2015, issued in connection with U.S. Appl. No. 14/564,544, filed Dec. 9, 2014, 7 pages.

Non-Final Office Action dated Nov. 3, 2016, issued in connection with U.S. Appl. No. 14/184,528, filed Feb. 19, 2014, 17 pages.

Non-Final Office Action dated Jan. 4, 2017, issued in connection with U.S. Appl. No. 14/825,961, filed Aug. 13, 2015, 11 pages.

Non-Final Office Action dated Jun. 4, 2015, issued in connection with U.S. Appl. No. 13/871,795, filed Apr. 26, 2013, 16 pages.

Non-Final Office Action dated Mar. 4, 2015, issued in connection with U.S. Appl. No. 13/435,776, filed Mar. 30, 2012, 16 pages.

Non-Final Office Action dated Oct. 4, 2016, issued in connection with U.S. Appl. No. 15/08,9758, filed Apr. 4, 2016, 9 pages.

Non-Final Office Action dated Oct. 5, 2016, issued in connection with U.S. Appl. No. 13/864,250, filed Apr. 17, 2013, 10 pages

Non-Final Office Action dated Oct. 5, 2016, issued in connection with U.S. Appl. No. 13/864,252, filed Apr. 17, 2013, 11 pages

Non-Final Office Action dated Oct. 6, 2016, issued in connection with U.S. Appl. No. 15/088,678, filed Apr. 1, 2016, 9 pages

Non-Final Office Action dated Aug. 9, 2016, issued in connection with U.S. Appl. No. 13/871,795, filed Apr. 26, 2013, 31 pages.

Non-Final Office Action dated Mar. 8, 2016, issued in connection with U.S. Appl. No. 13/848,921, filed Mar. 22, 2013, 13 pages

Non-Final Office Action dated Aug. 9, 2016, issued in connection with U.S. Appl. No. 13/871,795, filed May 17, 2016, 8 pages

Non-Final Office Action dated Mar. 8, 2016, issued in connection with U.S. Appl. No. 13/848,921, filed Mar. 22, 2013, 13 pages

Non-Final Office Action dated Aug. 9, 2016, issued in connection with U.S. Appl. No. 13/871,795, filed Apr. 26, 2013, 31 pages.

Non-Final Office Action dated Mar. 10, 2011, issued in connection with U.S. Appl. No. 12/035,112, filed Feb. 21, 2008, 12 pages.

Non-Final Office Action dated May 10, 2016, issued in connection with U.S. Appl. No. 14/504,812, filed Oct. 2, 2014, 22 pages.

Non-Final Office Action dated Nov. 10, 2016, issued in connection with U.S. Appl. No. 15/243,355, filed Aug. 22, 2016, 11 pages.

Non-Final Office Action dated Dec. 12, 2016, issued in connection with U.S. Appl. No. 15/343,019, filed Nov. 3, 2016, 8 pages.

Non-Final Office Action dated Jun. 12, 2015, issued in connection with U.S. Appl. No. 13/848,932, filed Mar. 22, 2013, 16 pages.

Non-Final Office Action dated Mar. 12, 2015, issued in connection with U.S. Appl. No. 13/705,174, filed Dec. 5, 2012, 13 pages.

Non-Final Office Action dated Jan. 13, 2016, issued in connection with U.S. Appl. No. 14/184,528, filed Feb. 19, 2014, 14 pages.

Non-Final Office Action dated Mar. 13, 2015, issued in connection with U.S. Appl. No. 13/705,177, filed Dec. 5, 2012, 15 pages.

Non-Final Office Action dated Dec. 15, 2016, issued in connection with U.S. Appl. No. 13/458,558, filed Apr. 27, 2012, 12 pages.

Final Office Action dated Apr. 13, 2017, issued in connection with U.S. Appl. No. 14/563,515, filed Dec. 8, 2014, 13 pages.

Final Office Action dated Apr. 6, 2017, issued in connection with U.S. Appl. No. 14/620,937, filed Feb. 12, 2015, 15 pages.

Fries et al. "The MP3 and Internet Audio Handbook: Your Guide to the Digital Music Revolution." 2000, 320 pages.

Implicit LLC v. Sonos, Inc. (No. 14-1330-RGA), Defendant's Original Complaint (Mar. 3, 2017) (15 pages).

"Microsoft Windows XP File and Printer Share with Microsoft Windows" Microsoft Windows XP Technical Article, 2003, 65 pages.

"SMPTE Made Simple: A Time Code Tutor by Timeline," 1996, 46 pages.

Niederst, Jennifer "O'Reilly Web Design in a Nutshell," Second Edition, Sep. 2001, 678 pages.

Notice of Allowance dated Jun. 1, 2017, issued in connection with U.S. Appl. No. 14/808,397, filed Jul. 24, 2015, 5 pages.

Notice of Allowance dated May 16, 2017, issued in connection with U.S. Appl. No. 15/228,685, filed Aug. 4, 2016, 10 pages.

Notice of Allowance dated May 24, 2017, issued in connection with U.S. Appl. No. 14/806,070, filed Jul. 22, 2015, 5 pages.

Notice of Allowance dated Apr. 7, 2017, issued in connection with U.S. Appl. No. 14/629,937, filed Feb. 24, 2015, 8 pages.

Notice of Incomplete Re-Exam Request dated May 25, 2017, issued in connection with U.S. Appl. No. 30/013,959 , filed Apr. 1, 2016, 10 pages.

Renewed Request for Ex Parte Re-Examination, U.S. Appl. No. 90/013,959, filed Jun. 16, 2017, 126 pages.

Request for Ex Parte Reexamination submitted in U.S. Pat. No. 9,213,357 on May 22, 2017, 85 pages.

"Symantec pcAnywhere User's Guide," v 10.5.1, 1995-2002, 154 pages.

Non-Final Office Action dated Feb. 24, 2017, issued in connection with U.S. Appl. No. 14/619,813, filed Feb. 11, 2015, 9 pages.

Notice of Intent to Issue Re-Examination Certificate dated Mar. 2017, issued in connection with U.S. Appl. No. 90/013,859, filed Nov. 4, 2016, 10 pages.

Rothermel et al., "Clock Hierarchies—An Abstraction for Grouping and Controlling Media Streams," University of Stuttgart Institute of Parallel and Distributed High-Performance Systems, Jan. 1996, 23 pages.

Rothermel, Kurt, "State-of-the-Art and Future Research in Stream Synchronization," University of Stuttgart, 3 pages.

Sonos, Inc. v D&M Holdings, D&M Supp Opposition Brief including Exhibits, Mar. 17, 2017, 23 pages.

Sonos, Inc. v D&M Holdings, Expert Report of Jay P. Kesan including Appendices A-P, Feb. 20, 2017, 776 pages.

Sonos, Inc. v D&M Holdings (No. 14-1330-RGA), DI 226, Opinion Denying Inequitable Conduct Defenses, Feb. 6, 2017, updated, 5 pages.

Sonos, Inc. v D&M Holdings (No. 14-1330-RGA), DI 242, US District Judge Andrews 101 Opinion, Mar. 13, 2017, 16 pages.

Sonos, Inc. v D&M Holdings, Sonos Supp Opening Markman Brief including Exhibits, Mar. 3, 2017, 17 pages.

Sonos, Inc. v D&M Holdings, Sonos Supp Reply Markman Brief including Exhibits, Mar. 29, 2017, 36 pages.

Sonos, Inc. v. D&M Holdings, Inc. (No. 14-1330-RGA), Defendants' Final Invalidity Contentions (Jan. 18, 2017) (106 pages).

ZX135: Installation Manual, LA Audio, Apr. 2003, 44 pages.

LG: RJP-201M Remote Jack Pack Installation and Setup Guide, 2010, 24 pages.

Lienhart et al., "On the Importance of Exact Synchronization for Distributed Audio Signal Processing," Session L: Poster Session II—ICASSP'03 Papers, 2002, 1 page.

LinkSys by Cisco, Wireless Home Audio Controller, Wireless-N Touchscreen Remote DMRW1000 Datasheet, Copyright 2008, 2 pages.

LinkSys by Cisco, Wireless Home Audio Controller, Wireless-N Touchscreen Remote DMRW1000 User Guide, Copyright 2008, 64 pages.

LinkSys by Cisco, Wireless Home Audio Player, Wireless-N Music Extender DMP100 Quick Installation Guide, Copyright 2009, 32 pages.

LinkSys by Cisco, Wireless Home Audio Player, Wireless-N Music Extender DMP100 User Guide, Copyright 2008, 65 pages.

Liu et al., "A synchronization control scheme for real-time streaming multimedia applications," Packet Video. 2003, 10 pages, vol. 2003.

Liu et al., "Adaptive Delay Concealment for Internet Voice Applications with Packet-Based Time-Scale Modification." Information Technologies 2000, pp. 91-102.

Parasound Zpre2 Zone Preamplifier with PTZI Remote Control, 2005, 16 pages.

Pillai et al., "A Method to Improve the Robustness of MPEG Video Applications over Wireless Networks," Kent Ridge Digital Labs, 2000, 15 pages.

Proficient Audio Systems M6 Quick Start Guide, 2011, 5 pages.

Proficient Audio Systems: Proficient Editor Advanced Programming Guide, 2007, 40 pages.

US 11,388,532 B2

Page 16

(56)

References Cited

OTHER PUBLICATIONS

Programming Interface for WL54040 Dual-Band Wireless Transceiver, AVAGO0066, Agere Systems, May 2004, 16 pages.

Radio Shack, "Auto-Sensing 4-Way AudioVideo Selector Switch," 2004, 1 page.

RadioShack, Pro-2053 Scanner, 2002 Catalog, part 1, 100 pages.

RadioShack, Pro-2053 Scanner, 2002 Catalog, part 2, 100 pages.

RadioShack, Pro-2053 Scanner, 2002 Catalog, part 3, 100 pages.

RadioShack, Pro-2053 Scanner, 2002 Catalog, part 4, 100 pages.

RadioShack, Pro-2053 Scanner, 2002 Catalog, part 5, 46 pages.

Rangan et al., "Feedback Techniques for Continuity and Synchronization in Multimedia Information Retrieval," ACM Transactions on Information Systems, 1995, pp. 145-176, vol. 13, No. 2.

Reid, Mark, "Multimedia conferencing over ISDN and IP networks using ITU-T H-series recommendations: architecture, control and coordination," Computer Networks, 1999, pp. 225-235, vol. 31.

Rothermel et al., "An Adaptive Protocol for Synchronizing Media Streams," Institute of Parallel and Distributed High-Performance Systems (IPVR), 1997, 26 pages.

Rothermel et al., "An Adaptive Stream Synchronization Protocol," 5th International Workshop on Network and Operating System Support for Digital Audio and Video, Apr. 18-21, 1995, 12 pages.

Rothermel et al., "Synchronization in Joint-Viewing Environments," University of Stuttgart Institute of Parallel and Distributed High-Performance Systems, 1992, 13 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Complaint for Patent Infringement, filed Oct. 21, 2014, 20 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Declaration of Steven C. Visser, executed Sep. 9, 2016, 40 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions, filed Sep. 14, 2016, 100 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 1: Defendants' Invalidity contentions for U.S. Pat. No. 7,571,014 filed Apr. 15, 2016, 161 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 10: Defendants' Invalidity contentions for U.S. Pat. No. 9,213,357 filed Apr. 15, 2016, 244 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 12: Defendants' Invalidity contentions for U.S. Design Pat. No. D559,197 filed Apr. 15, 2016, 36 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 2: Defendants' Invalidity contentions for U.S. Pat. No. 8,588,949 filed Apr. 15, 2016, 112 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 3: Defendants' Invalidity Contentions for U.S. Pat. No. 8,843,224 filed Apr. 15, 2016, 118 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 4: Defendants' Invalidity Contentions for U.S. Pat. No. 8,938,312 filed Apr. 15, 2016, 217 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 5: Defendants' Invalidity Contentions for U.S. Pat. No. 8,938,637 filed Apr. 15, 2016, 177 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 6: Defendants' Invalidity Contentions for U.S. Pat. No. 9/042,556 filed Apr. 15, 2016, 86 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 7: Defendants' Invalidity Contentions for U.S. Pat. No. 9,130,771 filed Apr. 15, 2016, 203 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 8: Defendants' Invalidity Contentions for U.S. Pat. No. 9,195,258 filed Apr. 15, 2016, 400 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions, filed Apr. 15, 2016, 97 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Preliminary Identification of Indefinite Terms, provided Jul. 29, 2016, 8 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Preliminary Identification of Prior Art References, provided Jul. 29, 2016, 5 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendants' Amended Answer, Defenses, and Counterclaims for Patent Infringement, filed Nov. 30, 2015, 47 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendants' Answer to Plaintiffs' Second Amended Complaint, filed Apr. 30, 2015, 19 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendants' First Amended Answer to Plaintiffs' Third Amended Complaint, filed Sep. 7, 2016, 23 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendants' Reply in Support of Partial Motion for Judgment on the Pleadings, filed Jun. 10, 2016, 15 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Exhibit A: Defendants' Second Amended Answer to Plaintiffs' Third Amended Complaint, filed Sep. 9, 2016, 43 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., First Amended Complaint for Patent Infringement, filed Dec. 17, 2014, 26 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Joint Claim Construction Chart, vol. 1 of 3 with Exhibits A-O, filed Aug. 17, 2016, 30 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Opening Brief in Support of Defendants' Partial Motion for Judgment on the Pleadings for Lack of Patent-Eligible Subject Matter, filed May 6, 2016, 27 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Plaintiff Sonos, Inc.'s Opening Claim Construction Brief, filed Sep. 9, 2016, 26 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Plaintiff Sonos, Inc.'s Response in Opposition to Defendants' Partial Motion for Judgment on the Pleadings, filed May 27, 2016, 24 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Second Amended Complaint for Patent Infringement, filed Feb. 27, 2015, 19 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Third Amended Complaint for Patent Infringement, filed Jan. 29, 2016, 47 pages.

Sony: AIR-SA 50R Wireless Speaker, Copyright 2009, 2 pages.

Sony: Altus Quick Setup Guide ALT-SA32PC, Copyright 2009, 2 pages.

Sony: BD/DVD Home Theatre System Operating Instructions for BDV-E300, E301 and E801, Copyright 2009, 115 pages.

Sony: BD/DVD Home Theatre System Operating Instructions for BDV-IT1000/BDV-IS1000, Copyright 2008, 159 pages.

Sony: Blu-ray Disc/DVD Home Theatre System Operating Instructions for BDV-IZ1000W, Copyright 2010, 88 pages.

Sony: DVD Home Theatre System Operating Instructions for DAV-DZ380W/DZ680W/DZ880W, Copyright 2009, 136 pages.

Sony: DVD Home Theatre System Operating Instructions for DAV-DZ870W, Copyright 2008, 128 pages.

Sony Ericsson MS500 User Guide, Copyright 2009, 2 pages.

Sony: Home Theatre System Operating Instructions for HT-IS100, Copyright 2008, 168 pages.

Sony: HT-IS100, 5.1 Channel Audio System, last updated Nov. 2009, 2 pages.

Sony: Multi Channel AV Receiver Operating Instructions, 2007, 80 pages.

Sony: Multi Channel AV Receiver Operating Instructions for STR-DN1000, Copyright 2009, 136 pages.

Sony: STR-DN1000, Audio Video Receiver, last updated Aug. 2009, 2 pages.

Sony: Wireless Surround Kit Operating Instructions for WHAT-SA2, Copyright 2010, 56 pages.

Taylor, Marilou, "Long Island Sound," Audio Video Interiors, Apr. 2000, 8 pages.

TOA Corporation, Digital Processor DP-0206 DACsys2000 Version 2.00 Software Instruction Manual, Copyright 2001, 67 pages.

WaveLan High-Speed Multimode Chip Set, AVAGO0003, Agere Systems, Feb. 2003, 4 pages.

WaveLan High-Speed Multimode Chip Set, AVAGO0005, Agere Systems, Feb. 2003, 4 pages.

WaveLAN Wireless Integration Developer Kit (WI-DK) for Access Point Developers, AVAGO0054, Agere Systems, Jul. 2003, 2 pages.

WaveLAN Wireless Integration-Developer Kit (WI-DK) Hardware Control Function (HGF), AVAGO0052, Agere Systems, Jul. 2003, 2 pages.

WI-DK Release 2 WaveLan Embedded Drivers for VxWorks and Linux, AVAGO0056, Agere Systems, Jul. 2003, 2 pages.

US 11,388,532 B2

Page 17

(56)

References Cited

OTHER PUBLICATIONS

WI-DK Release 2 WaveLan END Reference Driver for VxWorks, AVAGO0044, Agere Systems, Jul. 2003, 2 pages.

WI-DK Release 2 WaveLan LKM Reference Drivers for Linux, AVAGO0048, Agere Systems, Jul. 2003, 4 pages.

WPA Reauthentication Rates, AVAGO0063, Agere Systems, Feb. 2004, 3 pages.

Notice of Allowance dated Sep. 9, 2016, issued in connection with U.S. Appl. No. 15/134,761, filed Apr. 21, 2016, 7 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendants' Opposition to Sonos's Motion to Strike Defendants' New Amended Answer Submitted with their Reply, provided Oct. 3, 2016, 15 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Exhibit A: Defendants' First Amended Answer to Plaintiffs' Third Amended Complaint, provided Aug. 1, 2016, 26 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Exhibit A: Defendants' Second Amended Answer to Plaintiffs' Third Amended Complaint, provided Oct. 12, 2016, 43 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Exhibit A: Defendants' Second Amended Answer to Plaintiffs' Third Amended Complaint, provided Sep. 9, 2016, 88 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Exhibit B: Defendants' Second Amended Answer to Plaintiffs' Third Amended Complaint, provided Oct. 12, 2016, 43 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Opening Brief in Support of Defendants' Motion for Leave to Amend Their Answer to Add the Defense of Inequitable Conduct, provided Aug. 1, 2016, 11 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Order, provided Oct. 7, 2016, 2 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Plaintiff's Opposition to Defendants' Motion for Leave to Amend Their Answer to Add the Defense of Inequitable Conduct, provided Aug. 26, 2016, 25 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Redlined Exhibit B: Defendants' First Amended Answer to Plaintiffs' Third Amended Complaint, provided Aug. 1, 2016, 27 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Reply Brief in Support of Defendants' Motion for Leave to Amend their Answer to Add the Defense of Inequitable Conduct, provided Nov. 10, 2016, 16 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Reply Brief in Support of Defendants' Motion for Leave to Amend their Answer to Add the Defense of Inequitable Conduct, provided Sep. 9, 2016, 16 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Sonos's Motion to Strike Defendants' New Amended Answer Submitted with their Reply Brief, provided Sep. 15, 2016, 10 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Sonos's Opposition to Defendants' Motion for Leave to Amend their Answer to Add the Defense of Inequitable Conduct, provided Oct. 31, 2016, 26 pages.

Third Party Request for Ex Parte Re-Examination, U.S. Appl. No. 90/013,859, filed Nov. 4, 2016, 424 pages.

United States Patent and Trademark Office, U.S. Appl. No. 60/490,768, filed Jul. 28, 2003, entitled "Method for synchronizing audio playback between multiple networked devices," 13 pages.

United States Patent and Trademark Office, U.S. Appl. No. 60/825,407, filed Sep. 12, 2003, entitled "Controlling and manipulating groupings in a multi-zone music or media system," 82 pages.

"Welcome. You're watching Apple TV." Apple TV 1st Generation Setup Guide, Apr. 8, 2008 Retrieved Oct. 14, 2014, 40 pages.

"Welcome. You're watching Apple TV." Apple TV 2nd Generation Setup Guide, Mar. 10, 2011 Retrieved Oct. 16, 2014, 36 pages.

"Welcome. You're watching Apple TV." Apple TV 3rd Generation Setup Guide, Mar. 16, 2012 Retrieved Oct. 16, 2014, 36 pages.

AVTransport:1 Service Template Version 1.01 for UPnP, Version 1.0 (Jun. 25, 2002) (66 pages).

Connection Manager: 1 Service Template Version 1.01 for UPnP, Version 1.0 (Jun. 25, 2002) (25 pages).

ContentDirectory:1 Service Template Version 1.01 for UPnP, Version 1.0 (Jun. 25, 2002) (89 pages).

Designing a UPnP Av MediaServer, Nelson Kidd (2003) (SONDM000115062-116) (55 pages).

General Event Notification Architecture Base: Client to Arbiter (Apr. 2000) (23 pages).

Home Networking with Universal Plug and Play, IEEE Communications Magazine, vol. 39 No. 12 (Dec. 2001) (D+M_0402025-40) (16 pages).

Intel Designing a UPnP AV Media Renderer, v. 1.0 ("Intel AV Media Renderer") (May 20, 2003) (SONDM000115117-62) (46 pages).

Intel Media Renderer Device Interface ("Intel Media Renderer") (Sep. 6, 2002) (62 pages).

Intel SDK for UPnP Devices Programming Guide, Version 1.2.1, (Nov. 2002) (30 pages).

Linux SDK for UPnP Devices v. 1.2 (Sep. 6, 2002) (101 pages).

MediaRenderer:1 Device Template Version 1.01 for UPnP, Version 1.0 (Jun. 25, 2002) (12 pages).

MediaServer:1 Device Template Version 1.01 for UPnP, Version 1.0 (Jun. 25, 2002) (12 pages).

Microsoft Universal Plug and Play (UPnP) Client Support ("Microsoft UPnP") (Aug. 2001) (D+M_0402007-24) (18 pages).

Microsoft Window's XP Reviewer's Guide (Aug. 2001) (D+M_0402225-85) (61 pages).

Network Time Protocol (NTP), RFC 1305 (Mar. 1992) (D+M_0397417-536) (120 pages).

Real Time Control Protocol (RTCP) and Realtime Transfer Protocol (RIP), RFC 1889 (Jan. 1996) (D+M_0397810-84) 75 pages.

Realtime Streaming Protocol (RTSP), RFC 2326 (Apr. 1998) (D+M_0397945-8036) (92 pages).

Realtime Transport Protocol (RTP), RFC 3550 (Jul. 2003) (D+M_0398235-323) (89 pages).

RenderingControl:1 Service Template Version 1.01 for UPnP, Version 1.0, (Jun. 25, 2002) (SONDM000115187-249) 63 pages.

Simple Network Time Protocol (SNTP), RFC 1361 (Aug. 1992) (D+M_0397537-46) (10 pages).

Simple Network Time Protocol (SNTPII), RFC 1769 (Mar. 1995) (D+M_0397663-76) (14 pages).

Service Discovery Protocol/1.0 Operating without an Arbiter (Oct. 28, 1999) (24 pages).

Sonos, Inc. v. D&M Holdings (No. 14-1330-RGA), DI 206-1, Transcript of 101 Hearing (Nov. 28, 2016) (28 pages).

Sonos, Inc. v. D&M Holdings (No. 14-1330-RGA), DI 207, Public Joint Claim Construction Brief (Nov. 30, 2016) (88 pages).

Sonos, Inc. v. D&M Holdings (No. 14-1330-RGA), DI 214, D&M Post-Markman Letter (Dec. 22, 2016) (13 pages).

Sonos, Inc. v. D&M Holdings (No. 14-1330-RGA), DI 215, Sonos Post-Markman Letter (Dec. 22, 2016) (15 pages).

Sonos, Inc. v. D&M Holdings (No. 14-1330-RGA), DI 219, Claim Construction Opinion (Jan. 12, 2017) (24 pages).

Sonos, Inc. v. D&M Holdings (No. 14-1330-RGA), DI 221, Claim Construction Order (Jan. 18 2017) (2 pages).

Sonos, Inc. v. D&M Holdings (No. 14-1330-RGA), Markman Hearing Transcript (Dec. 14, 2016) (69 pages).

Understanding Universal Plug and Play, Microsoft White Paper (Jun. 2000) (D+M_0402074-118) (45 pages).

Universal Plug and Play Device Architecture V. 1.0, (Jun. 8, 2000) (54 pages).

Universal Plug and Play in Windows XP, Tom Fout. Microsoft Corporation (Jul. 2001) (D+M_0402041-73) (33 pages).

Universal Plug and Play ("UPnP") AV Architecture:1 for UPnP, Version 1.0, (Jun. 25, 2002) (D+M_0298151-72) (22 pages).

Universal Plug and Play Vendor's Implementation Guide (Jan. 5, 2000) (7 pages).

UPnP AV Architecture:0.83 (Jun. 12, 2002) (SONDM000115483-504) (22 pages).

UPnP Design by Example, A Software Developers Guide to Universal Plug and Play Michael Jeronimo and JackWeast, Intel Press (D+FM_0401307-818) (Apr. 2003) (511 pages).

WANCommonInterfaceConfig:1 Service Template Version 1.01 for UPnP, Ver. 1.0 (Nov. 12, 2001) (D+M_0401820-43) (24 pages).

WANIPConnection:1 Service Template Version 1.01 for UPnP Ver. 1.0 (Nov. 12, 2001) (D+M_0401844-917) (74 pages).

WANPPConnection:1 Service Template Version 1.01 for UPnP, Version 1.0 (Nov. 12, 2001) (D+M_0401918-2006) (89 pages).

Windows Media Connect Device Compatibility Specification (Apr. 12, 2004) (16 pages).

US 11,388,532 B2

Page 18

(56)

References Cited

OTHER PUBLICATIONS

UIPnP, "Universal Plug and Play Device Architecture," Jun. 8, 2000; version 1.0; Microsoft Corporation; pp. 1-54.

"U.S. Appl. No. 13/083,499, filed Apr. 8, 2011, "Multi-Channel Pairing in a Media System.""

Yamaha DME 32 manual: copyright 2001.

"Yamaha DME 64 Owner's Manual; copyright 2004, 80 pages".

"Yamaha DME Designer 3.5 setup manual guide; copyright 2004, 16 pages".

"Yamaha DME Designer 3.5 User Manual; Copyright 2004, 507 pages".

Yamaha DME Designer software manual: Copyright 2004, 482 pages.

Advisory Action dated Dec. 22, 2011, issued in connection with U.S. Appl. No. 11/853,790, filed Sep. 11, 2007, 2 pages.

"AudioTron Quick Start Guide, Version 1.0", Voyetra Turtle Beach, Inc., Mar. 2001, 24 pages.

"AudioTron Reference Manual, Version 3.0", Voyetra Turtle Beach, Inc., May 2002, 70 pages.

"AudioTron Setup Guide, Version 3.0", Voyetra Turtle Beach, Inc., May 2002, 38 pages.

Bluetooth. "Specification of the Bluetooth System: The ad hoc SCATTERNET for affordable and highly functional wireless connectivity," Core, Version 1.0 A, 26 Jul. 1999, 1068 pages.

Bluetooth. "Specification of the Bluetooth System: Wireless connections made easy," Core, Version 1.0 B, Dec. 1, 1999, 1076 pages.

Canadian Patent Office, Office Action dated Apr. 10, 2015, issued in connection with Canadian Patent Application No. 2,832,542, 3 pages.

Chinese Patent Office, Office Action dated Nov. 27, 2015, issued in connection with Chinese Patent Application No. 201280028038.9, 26 pages.

"Corrected Notice of Allowance dated Oct. 30, 2015, issued in connection with U.S. Appl. No. 13/013,740, filed Jan. 25, 2011, 2 pages."

Dell, Inc. "Dell Digital Audio Receiver: Reference Guide," Jun. 2000, 70 pages.

Dell, Inc. "Start Here," Jun. 2000, 2 pages.

Dorwaldt; Carl, "EASE 4.1 Tutorial", Renkus-Heinz, Inc., 2004, 417 pages.

"Dynaudio Acoustics Air Series, <http://www.soundonsound.com/sos/sep02/articles/dynaudioair.asp>, 2002, 4 pages."

Final Office Action dated Jul. 23, 2014, issued in connection with U.S. Appl. No. 13/896,037, filed May 16, 2013, 12 pages.

Final Office Action dated Feb. 10, 2014, issued in connection with U.S. Appl. No. 13/013,740, filed Jan. 25, 2011, 13 pages.

Final Office Action dated Oct. 13, 2011, issued in connection with U.S. Appl. No. 11/853,790, filed Sep. 11, 2007, 10 pages.

"Final Office Action dated Jun. 29, 2015, issued in connection with U.S. Appl. No. 14/465,457, filed Aug. 21, 2014, 13 pages."

Intellectual Property Office of Japan, Office Action dated Jan. 6, 2015, issued in connection with Japanese Patent Application No. 2014-503273, 5 pages.

International Bureau, International Preliminary Report on Patentability, dated Oct. 17, 2013, issued in connection with International Application No. PCT/IB2012/052071, filed on Apr. 26, 2012, 7 pages.

International Searching Authority, International Search Report for Application No. PCT/IB2012/052071, dated Aug. 23, 2012, 3 pages.

International Searching Authority, Written Opinion dated Aug. 23, 2012, issued in connection with International Application No. PCT/IB2012/052071, filed on Apr. 26, 2012, 6 pages.

Japanese Intellectual Property Office, Office Action Summary dated Sep. 8, 2015, issued in connection with Japanese Patent Application No. 2014-503273, 4 pages.

Jo et al., "Synchronized One-to-many Media Streaming with Adaptive Playout Control," Proceedings of SPIE, 2002, pp. 71-82, vol. 4861.

Jones, Stephen, "Dell Digital Audio Receiver: Digital upgrade for your analog stereo" Analog Stereo Jun. 24, 2000 retrieved Jun. 18, 2014, 2 pages.

Louderback, Jim, "Affordable Audio Receiver Furnishes Homes With MP3," TechTV Vault. Jun. 28, 2000 retrieved Jul. 10, 2014, 2 pages.

Mills David L., "Network Time Protocol (Version 3) Specification, Implementation and Analysis," Network Working Group, Mar. 1992, 7 pages.

Non-Final Office Action dated Jan. 7, 2014, issued in connection with U.S. Appl. No. 13/896,829, filed May 17, 2013, 11 pages.

Non-Final Office Action dated Feb. 10, 2014, issued in connection with U.S. Appl. No. 13/083,499, filed Apr. 8, 2011, 12 pages.

Non-Final Office Action dated Jul. 23, 2014, issued in connection with U.S. Appl. No. 14/256,434, filed Apr. 18, 2014, 12 pages.

Non-Final Office Action dated Mar. 8, 2011, issued in connection with U.S. Appl. No. 11/853,790, filed Sep. 11, 2007, 10 pages.

"Non-Final Office Action dated May 9, 2014, issued in connection with U.S. Appl. No. 13/892,230, filed May 10, 2013, 10 pages".

"Non-Final Office Action dated Feb. 13, 2014, issued in connection with U.S. Appl. No. 13/896,037, filed May 16, 2013, 9 pages".

"Non-Final Office Action dated Feb. 13, 2015, issued in connection with U.S. Appl. No. 13/013,740, filed Jan. 25, 2011, 14 pages".

"Non-Final Office Action dated Mar. 23, 2015, issued in connection with U.S. Appl. No. 14/299,847, filed Jun. 9, 2014, 14 pages."

Non-Final Office Action dated Jan. 27, 2015, issued in connection with U.S. Appl. No. 14/465,457, filed Aug. 21, 2014, 11 pages.

Non-Final Office Action dated Sep. 27, 2013, issued in connection with U.S. Appl. No. 13/013,740, filed Jan. 25, 2011, 12 pages.

"Notice of Allowability dated Apr. 18, 2013 for U.S. Appl. No. 11/853,790, filed Sep. 11, 2007", United States Patent and Trademark Office, Apr. 18, 2013, 4 pages.

Notice of Allowance dated Jun. 2, 2014, issued in connection with U.S. Appl. No. 13/083,499, filed Apr. 8, 2011, 5 pages.

Notice of Allowance dated Dec. 5, 2014, issued in connection with U.S. Appl. No. 14/256,434, filed Apr. 18, 2014, 7 pages.

"Notice of Allowance dated Jul. 10, 2015, issued in connection with U.S. Appl. No. 13/013,740, filed Jan. 25, 2011, 9 pages".

Notice of Allowance dated Sep. 10, 2014, issued in connection with U.S. Appl. No. 13/892,230, filed May 10, 2013, 5 pages.

Notice of Allowance dated Jun. 12, 2014, issued in connection with U.S. Appl. No. 13/896,829, filed May 17, 2013, 5 pages.

"Notice of Allowance dated May 13, 2015, issued in connection with U.S. Appl. No. 14/299,847, filed Jun. 9, 2014, 10 pages."

Notice of Allowance dated Jan. 20, 2016, issued in connection with U.S. Appl. No. 14/465,457, filed Aug. 21, 2014, 10 pages.

Notice of Allowance dated Oct. 27, 2015, issued in connection with U.S. Appl. No. 14/299,847, filed Jun. 9, 2014, 5 pages.

Notice of Allowance dated Oct. 28, 2014, issued in connection with U.S. Appl. No. 13/896,037, filed May 16, 2013, 7 pages.

Palm, Inc., "Handbook for the Palm VII Handheld," May 2000, 311 pages.

Polycom Conference Composer manual: copyright 2001.

Presentations at WinHEC 2000, May 2000, 138 pages.

"RAM: DragNet software; available for sale at least 2006".

"884+ Automatic Matrix Mixer Control System," Ivie Technologies, Inc., 2000, pp. 1-4.

Advanced Driver Tab User Interface WaveLan GUI Guide, AVAGO0009, Agere Systems, Feb. 2004, 4 pages.

Agere Systems' Voice-over-Wireless LAN (VoWLAN) Station Quality of Service, AVAGO0015, Agere Systems, Jan. 2005, 5 pages.

Akyildiz et al., "Multimedia Group Synchronization Protocols for Integrated Services Networks," IEEE Journal on Selected Areas in Communications, 1996 pp. 162-173, vol. 14, No. 1.

Audio Authority: How to Install and Use the Model 1154 Signal Sensing Auto Selector, 2002, 4 pages.

Audio Authority: Model 11548 High Definition AV Auto Selector, 2008, 8 pages.

AudioSource: AMP 100 User Manual, 2003, 4 pages.

Automatic Profile Hunting Functional Description, AVAGO0013, Agere Systems, Feb. 2004, 2 pages.

AXIS Communication: AXIS P8221 Network I/O Audio Module, 2009, 41 pages.

US 11,388,532 B2

Page 19

(56)

References Cited

OTHER PUBLICATIONS

Balfanz et al., "Network-in-a-Box: How to Set Up a Secure Wireless Network in Under a Minute," 13th USENIX Security Symposium—Technical Paper, 2002, 23 pages.

Balfanz et al., "Talking to Strangers: Authentication in Ad-Hoc Wireless Networks," Xerox Palo Alto Research Center, 2002, 13 pages.

Barham et al., "Wide Area Audio Synchronisation," University of Cambridge Computer Laboratory, 1995, 5 pages.

Bogen Communications, Inc., ProMatrix Digitally Matrixed Amplifier Model PM3180, Copyright 1996, 2 pages.

Brassil et al., "Enhancing Internet Streaming Media with Cueing Protocols," 2000, 9 pages.

Cen et al., "A Distributed Real-Time MPEG Video Audio Player," Department of Computer Science and Engineering, Oregon Graduate Institute of Science and Technology, 1995, 12 pages.

Change Notification: Agere Systems WaveLan Multimode Reference Design (D2 to D3), AVAGO0042, Agere Systems, Nov. 2004, 2 pages.

Dannenberg et al., "A System Supporting Flexible Distributed Real-Time Music Processing," Proceedings of the 2001 International Computer Music Conference, 2001, 4 pages.

Dannenberg, Roger B., "Remote Access to Interactive Media," Proceedings of the SPIE 1785, 1993, 230-237.

Day, Rebecca, "Going Elan!" Primedia Inc., 2003, 4 pages.

Deep-Sleep Implementation in WL60011 for IEEE 802.11b Applications, AVAGO0020, Agere Systems, Jul. 2004, 22 pages.

Denon AV Surround Receiver AVR-1604/684 User's Manual, 2004, 128 pages.

Denon AV Surround Receiver AVR-5800 Operating Instructions, Copyright 2000, 67 pages.

Fireball DVD and Music Manager DVDM-100 Installation and User's Guide, Copyright 2003, 185 pages.

Fireball MP-200 User's Manual, Copyright 2006, 93 pages.

Fireball Remote Control Guide WD006-1-1, Copyright 2003, 19 pages.

Fireball SE-D1 User's Manual, Copyright 2005, 90 pages.

Fober et al., "Clock Skew Compensation over a High Latency Network," Proceedings of the ICMC, 2002, pp. 548-552.

Gaston et al., "Methods for Sharing Stereo and Multichannel Recordings Among Planetariums," Audio Engineering Society Convention Paper 7474, 2008, 15 pages.

Herre et al., "The Reference Model Architecture for MPEG Spatial Audio Coding," Audio Engineering Society Convention Paper (Presented at the 118th Convention), May 28-31, 2005, 13 pages.

IBM Home Director Installation and Service Manual, Copyright 1998, 124 pages.

IBM Home Director Owner's Manual, Copyright 1999, 67 pages.

Integra Audio Network Receiver NAC 2.3 Instruction Manual, 68 pages.

Integra Audio Network Server NAS 2.3 Instruction Manual, pp. 1-32.

Integra Service Manual, Audio Network Receiver Model NAC-2.3, Dec. 2002, 44 pages.

Ishibashi et al., "A Comparison of Media Synchronization Quality Among Reactive Control Schemes," IEEE Infocom, 2001, pp. 77-84.

Issues with Mixed IEEE 802.b/802.11g Networks, AVAGO0058, Agere Systems, Feb. 2004, 5 pages.

Lake Processors: Lake® LM Series Digital Audio Processors Operation Manual, 2011, 71 pages.

"A/V Surround Receiver AVR-5800," Denon Electronics, 2000, 2 pages.

"A/V System Controller, Owner's Manual," B&K Components, Ltd., 1998, 52 pages.

"Denon 2003-2004 Product Catalog," Denon, 2003-2004, 44 pages.

"DP-0206 Digital Signal Processor," TOA Electronics, Inc., 2001, pp. 1-12.

"Home Theater Control Systems," Cinema Source, 2002, 19 pages.

"Model MRC44 Four Zone—Four Source Audio/Video Controller/Amplifier System," Xantech Corporation, 2002, 52 pages.

"NexSys Software v. 3 Manual," Crest Audio, Inc., 1997, 76 pages.

"Residential Distributed Audio Wiring Practices," Leviton Network Solutions, 2001, 13 pages.

"RVL-6 Modular Multi-Room Controller, Installation & Operation Guide," Nile Audio Corporations, 1999, 46 pages.

"Systemline Modular Installation Guide, Multiroom System," Systemline, 2003, pp. 1-22.

"ZR-8630AV MultiZone AudioVideo Receiver, Installation and Operation Guide," Niles Audio Corporation, 2003, 86 pages.

Canadian Patent Office, Canadian Office Action dated Aug. 30, 2017, issued in connection with CA Application No. 2947275, 5 pages.

Chinese Patent Office, First Office Action dated Oct. 12, 2018, issued in connection with Chinese Application No. 201610804134.8, 10 pages.

Corrected Notice of Allowance dated Dec. 6, 2017, issued in connection with U.S. Appl. No. 15/228,685, filed Aug. 4, 2016, 5 pages.

Final Office Action dated Jan. 3, 2019, issued in connection with U.S. Appl. No. 15/405,931, filed Jan. 13, 2017, 16 pages.

Final Office Action dated Dec. 7, 2017, issued in connection with U.S. Appl. No. 14/619,813, filed Feb. 11, 2015, 11 pages.

Japanese Patent Office, Office Action dated Dec. 18, 2018, issued in connection with Japanese Application No. 2017-211958, 8 pages.

Japanese Patent Office, Translation of Office Action dated Dec. 18, 2018, issued in connection with Japanese Application No. 2017-211958, 6 pages.

Machine Translation of JP2004-193868A Wireless Transmission and Reception System and Wireless Transmission and Reception Method, 2 pages.

Machine Translation of JP2007-2888405A Video Sound Output System, Video Sound Processing Method, and Program, 64 pages.

Non-Final Office Action dated Nov. 1, 2018, issued in connection with U.S. Appl. No. 16/129,758, filed Sep. 12, 2018, 23 pages.

Non-Final Office Action dated Jun. 11, 2018, issued in connection with U.S. Appl. No. 15/405,931, filed Jan. 13, 2017, 14 pages.

Non-Final Office Action dated May 14, 2018, issued in connection with U.S. Appl. No. 15/228,812, filed Aug. 4, 2016, 15 pages.

Non-Final Office Action dated Jan. 19, 2018, issued in connection with U.S. Appl. No. 14/629,937, filed Feb. 24, 2015, 14 pages.

Non-Final Office Action dated Aug. 22, 2018, issued in connection with U.S. Appl. No. 15/487,686, filed Apr. 14, 2017, 13 pages.

Non-Final Office Action dated Oct. 30, 2018, issued in connection with U.S. Appl. No. 16/128,443, filed Sep. 11, 2018, 21 pages.

Notice of Allowance dated Mar. 1, 2018, issued in connection with U.S. Appl. No. 14/619,813, filed Feb. 11, 2015, 7 pages.

Notice of Allowance dated Sep. 10, 2018, issued in connection with U.S. Appl. No. 14/629,937, filed Feb. 24, 2015, 7 pages.

Notice of Allowance dated Jul. 11, 2017, issued in connection with U.S. Appl. No. 14/825,961, filed Aug. 13, 2015, 5 pages.

Notice of Allowance dated Nov. 13, 2017, issued in connection with U.S. Appl. No. 14/563,515, filed Dec. 8, 2014, 11 pages.

Notice of Allowance dated Jan. 15, 2019, issued in connection with U.S. Appl. No. 15/487,686, filed Apr. 14, 2017, 8 pages.

Notice of Allowance dated Aug. 25, 2017, issued in connection with U.S. Appl. No. 14/505,966, filed Oct. 3, 2014, 5 pages.

Notice of Allowance dated Dec. 7, 2018, issued in connection with U.S. Appl. No. 15/228,812, filed Aug. 4, 2016, 7 pages.

Office Action in Ex Parte Reexamination dated on Oct. 20, 2017, issued in connection with U.S. Patent Reexamination Application No. 90/013959, filed Jun. 16, 2017, 50 pages.

Sonos, Inc. v. D&M Holdings Inc. et al., Defendants' 35 U.S.C. § 282 Notice filed Nov. 2, 2017, 31 pages.

Chinese Patent Office, Second Office Action and Translation dated Jun. 27, 2019, issued in connection with Chinese Application No. 201610804134.8, 15 pages.

Chinese Patent Office, Translation of Office Action dated Jun. 27, 2019, issued in connection with Chinese Application No. 201610804134.8, 10 pages.

US 11,388,532 B2

Page 20

(56)

References Cited

OTHER PUBLICATIONS

European Patent Office, European Office Action dated Sep. 16, 2019, issued in connection with European Application No. 17198867. 8, 6 pages.

Japanese Patent Office, Final Office Action dated Jun. 4, 2019, issued in connection with Japanese Patent Application No. 2017-211958, 8 pages.

Japanese Patent Office, Translation of Final Office Action dated Jun. 4, 2019, issued in connection with Japanese Patent Application No. 2017-211958, 5 pages.

Sonos, Inc. v. Lenbrook Industries Limited et al., Defendants' First Amended Answer and Counterclaims to Plaintiffs Complaint, filed Nov. 14, 2019, 66 pages.

Non-Final Office Action dated Sep. 27, 2019, issued in connection with U.S. Appl. No. 15/405,931, filed Jan. 13, 2017, 13 pages.

Non-Final Office Action dated Aug. 28, 2019, issued in connection with U.S. Appl. No. 16/422,160, filed May 24, 2019, 14 pages.

Non-Final Office Action dated Jul. 5, 2019, issued in connection with U.S. Appl. No. 16/383,561, filed Apr. 12, 2019, 12 pages.

Non-Final Office Action dated Jul. 5, 2019, issued in connection with U.S. Appl. No. 16/383,565, filed Apr. 12, 2019, 11 pages.

Notice of Allowance dated Nov. 4, 2019, issued in connection with U.S. Appl. No. 16/422,160, filed May 24, 2019, 13 pages.

Notice of Allowance dated Sep. 9, 2019, issued in connection with U.S. Appl. No. 16/383,561, filed Apr. 12, 2019, 18 pages.

Notice of Allowance dated Jun. 10, 2019, issued in connection with U.S. Appl. No. 16/128,443, filed Sep. 11, 2018, 10 pages.

Notice of Allowance dated May 30, 2019, issued in connection with U.S. Appl. No. 16/129,758, filed Sep. 12, 2018, 7 pages.

Notice of Allowance dated Sep. 5, 2019, issued in connection with U.S. Appl. No. 16/383,565, filed Apr. 12, 2019, 14 pages.

Sonos, Inc. v. Implicit, LLC: Declaration of Roman Chertov in Support of the Inter Partes Review of U.S. Pat. No. 7,391,791 dated Mar. 9, 2018, 92 pages.

Sonos, Inc. v. Implicit, LLC: Declaration of Roman Chertov in Support of the Inter Partes Review of U.S. Pat. No. 3,942,252 dated Mar. 9, 2018, 81 pages.

Sonos, Inc. v. Lenbrook Industries Limited et al., Defendants' Answer to Plaintiff's Complaint—Exhibit A, filed Oct. 14, 2019, 3 pages.

Sonos, Inc. v. Lenbrook Industries Limited et al., Defendants' Answer to Plaintiff's Complaint—Exhibit C, filed Oct. 14, 2019, 16 pages.

Sonos, Inc. v. Lenbrook Industries Limited et al., Defendants' Answer to Plaintiff's Complaint—Exhibit D, filed Oct. 14, 2019, 36 pages.

Sonos, Inc. v. Lenbrook Industries Limited et al., Defendants' Answer to Plaintiff's Complaint—Exhibit E, filed Oct. 14, 2019, 21 pages.

Sonos, Inc. v. Lenbrook Industries Limited et al., Defendants' Answer to Plaintiff's Complaint, filed Oct. 14, 2019, 56 pages.

Creative Sound Blaster Wireless Music, User's Guide, Version 1.0, Aug. 2003, 61 pages.

Crestron's Adagio Entertainment System with New AMS Processor Wins Awards at CEDIA, Sep. 29, 2006, 3 pages.

Crestron Adagio AMS Media System Operations Guide, 2008, 114 pages.

Crestron. Adagio. Home Entertainment is Just the Beginning . . . 2007, 10 pages.

Crestron. AVS Forum. Dec. 1, 2007, 9 pages.

Crestron. Industry Awards, Crestron's Spirit of Innovation has Resulted in the Most Award-Winning Products in the Industry, 2006, 6 pages.

Crestron. Industry Awards, Crestron's Spirit of Innovation has Resulted in the Most Award-Winning Products in the Industry, 2007, 5 pages.

Crome, Caleb. Logitech Squeezebox Boom Audio Design, 2008, 11 pages.

Dhir, Amit, "Wireless Home Networks—DECT, Bluetooth, Home RF, and Wirelss LANs," XILINX, wp135 (v1.0), Mar. 21, 2001, 18 pages.

Dierks et al. RFC 2246 The TLS Protocol, Jan. 1999, 80 pages.

D-Link. User's Manual, Wireless HID Media Player, Version 1.1, DSM-520, Sep. 28, 2005, 127 pages.

DLNA. Overview and Vision, White Paper, Jun. 2004, 16 pages.

DLNA. Use Case Scenarios, White Paper, Jun. 2004, 15 pages.

Duo Soundolier. Sound & Light : Wireless Speaker Torchire. Soundolier Integrated Wireless Technologies, 2006, 3 pages.

ECMA. Near Field Communication—White Paper, ECMA/TC32-TG19/2004/1, 9 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

ECMA. Near Field Communication, ECMA/TC32-TG19, Oct. 2002, 15 pages.

ECMA. Standard ECMA-340, Near Field Communication—Interface and Protocol NFCIP-1, Dec. 2002, 66 pages.

ECMA. What is Ecma? 2 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Epson. EpsonNet 802.11B, Convenient Printing Using Wireless Technology, 2002, 2 pages.

Epson. EpsonNet 802.11b, User's Guide, 2002, 68 pages.

Epson Product Support Bulletin. PSB # PSB.2003.05.005, Epson-Net 802.11b Wireless Print Server, Apr. 30, 2003, 30 pages.

Epson Product Support Bulletin. PSB # PSB.2003.05.007, Epson-Net 802.11b Wireless Print Server, Apr. 23, 2003, 10 pages.

Epson Stylus C80WN. Quick Start, 2002, 2 pages.

Epson Stylus C80WN. Setup and Installation, Nov. 2001, 67 pages.

Extron System Integrator Speakers. System Integrator Speaker Series. ExtroNews. Issue 16.2, Winter 2005, 32 pages.

EZ-Stream 11 Mbps Wireless Audio Adapter. Model No. SMCWAA-B. Home Entertainment Networking, 2 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Fielding et al. RFC 2616 Hypertext Transfer Protocol—HTTP/1.1, Jun. 1999, 114 pages.

First Action Pre-Interview Office Action dated Jun. 22, 2017, issued in connection with U.S. Appl. No. 14/516,883, filed Oct. 17, 2014, 4 pages.

First Office Action Interview dated Aug. 30, 2017, issued in connection with U.S. Appl. No. 14/516,883, filed Oct. 17, 2014, 5 pages.

Fried, John J. NewsRoom, Convergence melds personal computer, TV and stereo, Feb. 20, 2003, 4 pages.

Frodigh, Magnus. Wireless ad hoc networking—The art of networking without a network. Ericsson Review No. 4, 2000, 16 pages.

Gateway SOLO 5300 User Manual, 305 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Godber et al. Secure Wireless Gateway. RightsLink. Arizona State University, pp. 41-46 [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Golem. WLAN-MP3-Player zum Anschluss an die Stereoanlage, Jun. 1, 2003, 2 pages.

Guttmann, Erik. An API for the Zeroconf Multicast Address Allocation Protocol, Jun. 6, 2001, 11 pages.

Guttmann, Erik. Autoconfiguration for IP Networking: Enabling Local Communication, Jun. 2001, 6 pages.

Guttmann, Erik. Network Working Group, Zeroconf Host Profile Applicability Statement, Internet-Draft, Jul. 20, 2001, 9 pages.

Hawn, Andrew. TechTV, First Look: cd30 c300, 2004, 2 pages.

High Fidelity. New Wave in Speaker Design. Oct. 1980, 130 pages.

HomePod—Wireless Network Digital Music Player with FM Tuner, User Manual, 2003, 16 pages.

HomePod MP-100, Wireless Network Music Player, with USB Jukebox, Internet Radio, and FM Tuner, Specification, 2003, 2 pages.

HomePod. User Manual, Wireless Network Digital Audio Player with FM Tuner, 2003, 49 pages.

How cd30 Network MP3 Players Work, Feb. 2, 2004, 3 pages.

Howe et al. A Methodological Critique of Local Room Equalization Techniques, 5 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

US 11,388,532 B2

Page 21

(56)

References Cited

OTHER PUBLICATIONS

IEEE Standards 8023. Part 3: Carrier sense multiple access with collision detection CSMA/CD access method and physical layer specifications, Mar. 8, 2002, 1562 pages.

LIVE. User's Guide IS809B Wireless Speaker System, Copyright 2010, 12 pages.

Intel Announces WS-Discovery Spec for Joining Devices and Web Services, Intel Developer Forum Spring 2004, Feb. 17, 2004, 4 pages.

Intel Sees Unified Platform and Ecosystem as Key to Enabling the Digital Home, Intel Developer Forum, Feb. 17, 2004, 4 pages.

Intel Tools Validate First Solutions that Enable Devices to Work Together in the Digital Home, Intel Developer Forum, Feb. 17, 2004, 2 pages.

Intel. User's Manual, An Intel Socket 478 Processor Based Mainboard. Mar. 27, 2003, 96 pages.

Amazon: Philips MCW770 WiFi Wireless PC Link AM/FM 5-Cd Microsystem (Discontinued by Manufacturer): Home Audio & Theater, 5 pages [online]. [retrieved on Feb. 24, 2020]. Retrieved from the Internet URL: <https://www.amazon.com/gp/product/B000278KLC>.

Ashcroft et al. P4 Protocol Specification vo.2. Apr. 6, 2002, 11 pages [online]. [retrieved on Mar. 26, 2020]. Retrieved from the Internet URL: <https://snarfed.org/p4protocol>.

AudioPoint from Home Director. Play Digital Music on Your Conventional Stereo System, 2002, 2 pages.

AudioPoint, Welcome to the coolest way to listen to digital music over your conventional stereo equipment, Home Director HD00B02, 2002, 2 pages.

AvuTran AVB32-ES User's Manual, 2005, 25 pages.

AvuTran Avkit-ES for AD8HR User's Manual, 2005, 15 pages.

Barix Download Exstreamer Software. Accessed via WayBack Machine, Apr. 6, 2003. <http://www.barix.com/exstreamer/software.download.html>. 2 pages.

Barix. Exstreamer Datasheet. Accessed via WayBack Machine, Apr. 2, 2003. <http://www.barix.com/exstreamer/>. 1 page.

Barret, Ryan. P4 Proposal :CS194 Project Proposal. Toward an Application-Independent Distributed Network Platform. Apr. 9, 2002, 4 pages [online]. [retrieved on Mar. 26, 2020]. Retrieved from the Internet URL: <https://snarfed.org/p4proposal>.

Barrett, Ryan. (no title) Blog on P4Sync network and code, 1 page [online]. [retrieved on Mar. 26, 2020]. Retrieved from the Internet URL: <https://snarfed.org/p4>.

Bose. The Bose Lifestyle 50 System. Owner's Guide, Oct. 17, 2001, 55 pages.

Bose. The Bose Lifestyle Powered Speaker System. Owner's Guide, Dec. 20, 2001, 19 pages.

Canadian Patent Office, Canadian Office Action dated Jan. 27, 2020, issued in connection with Canadian Application No. 3032479, 4 pages.

Chinese Patent Office, Third Office Action and Translation dated Dec. 30, 2019, issued in connection with Chinese Application No. 201610804134.8, 10 pages.

C-Media Electronics Inc. CMI8768/8768+ Advanced Driver Software Architecture. User Manual, Revision: 1.0, May 25, 2004, 29 pages.

C-Media XeaR 3D Sound Solution. CMI8738 4/6—Channel PCI Audio Single Chip. User Manual, Rev. 2.1, May 21, 2002, 44 pages.

Connected Planet. Using PC Link. Streamium PC Link by Philips. Models MC-i200/250, SL300i, SL400i, MX6000i, last modified Aug. 5, 2004, 2 pages.

Creating the Future of Home Entertainment Today. NetStreams Product Catalog 2003/2004, 20 pages.

Crest Audio Pro Series 8001 Power Amplifier. V. 2.2 Mar. 25, 1997, 2 pages.

Davies, Chris. Sony Ericsson MS500 Bluetooth Splashproof Speaker. <http://www.slashgear.com/sony-ericsson-ms500-bluetooth-splashproof>. Mar. 17, 2009, 2 pages.

Denon AVR-3805 A/V Surround Receiver. Datasheet, last modified Mar. 1, 2004, 2 pages.

Digigram. EtherSound ES8in/8out Ethernet Audio Bridges. Easy and Cost-Effective Audio Distribution, Nov. 2002, 4 pages.

DP-0206 TOA Digital Signal Processor. TOA Corporation, 2001, 4 pages.

Exstreamer. Network MP3 player for digital audio streaming in a consumer, home installation and commercial applications. Barix Think Further. Sep. 2002, 2 pages.

Exstreamer. The Exstreamer Instruction Manual. Barix Think Further. Version 1.5 , Oct. 2002, 21 pages.

Exstreamer. The Exstreamer Technical Description: Version 1.5. Barix Think Further. Oct. 2002, 36 pages.

Final Office Action dated Apr. 20, 2020, issued in connection with U.S. Appl. No. 15/405,931, filed Jan. 13, 2017, 8 pages.

FireBall Digital Music Manager E-40 and E-120. Meet FireBall. The Industry's choice for managing your entire music collection. Datasheet. 2003, 2 pages.

Fireball E2 User's Manual. Escient. Gracenote cddb. 2000-2004, 106 pages.

Getting to know Logitech Squeezebox Touch Wi-Fi Music Player. Features Guide, 2010, 36 pages.

Google's Answer to Complaint and Counterclaims filed with United States District Court Central District of California, Western Division on Mar. 2, 2020, 50 pages.

Google's Counterclaims to Sonos's Complaint filed with United States District Court Central District of California, Western Division on Mar. 11, 2020, 13 pages.

HP Deskjet 5850 User Guide, copyright 2003, 217 pages.

LA Audio ZX135E 6 Zone Expander. Pro Audio Design Pro. Inc. <https://www.praudiodesign.com/products/la-audio-zx135e-6-zone-expander>, accessed Mar. 26, 2020, 6 pages.

Microsoft Windows XP Student Edition Complete. University of Salford. Custom Guide Learn on Demand, 2004, 369 pages.

Model MRC88 Eight Zone—Eight Source Audio/Video Controller/Amplifier System. Xantech Corporation, 2003, 102 pages.

Multi-Zone Control Systems. ZR-8630AV MultiZone Receiver. Niles. <http://www.ampersandcom.com/zr8630ay.html> accessed Mar. 26, 2020, 5 pages.

Musica 5000 Series. Multi-Room Audio System, NetStreams, 2005, 7 pages.

Musica MUR2E Network Interface. NetStreams Creating the future of home entertainment—today, 2004, 2 pages.

Musica MUR2EM Network Interface. NetStreams the IP Based Distributed Entertainment Company, 2005, 2 pages.

NetStreams Musica MU5066. Multi-Room Audio System. Installation and User's Guide, 2005, 44 pages.

NetStreams Musica. NS-MU4602 Audio Distribution System, Integration & Design Guide. The IP-Based Audio Distribution Company, 2004, 22 pages.

Non-Final Office Action dated Mar. 11, 2020, issued in connection with U.S. Appl. No. 16/773,966, filed Jan. 27, 2020, 34 pages.

Non-Final Office Action dated Apr. 13, 2020, issued in connection with U.S. Appl. No. 16/297,991, filed Mar. 11, 2019, 16 pages.

Non-Final Office Action dated Feb. 13, 2020, issued in connection with U.S. Appl. No. 16/422160, filed May 24, 2019, 8 pages.

Non-Final Office Action dated Jan. 27, 2020, issued in connection with U.S. Appl. No. 16/383,561, filed Apr. 12, 2019, 13 pages.

Notice of Allowance dated Nov. 27, 2019, issued in connection with U.S. Appl. No. 16/128,443, filed Sep. 11, 2018, 5 pages.

P4 0.3.1 software/source code available via link ("Download P4 0.3.1.") 1 page [online]. [retrieved on Mar. 26, 2020]. Retrieved from the Internet URL: <http://snarfed.org/p4>.

P4sync/player.cpp. GitHub. Copyright 2005, 4 pages [online]. [retrieved on Mar. 26, 2020]. Retrieved from the Internet URL: <http://github.com/snarfed/p4sync/blob/master/player.cpp>.

Parrot DS1120 User Guide, English. Retrieved on Mar. 26, 2020, 11 pages.

NewsRoom. Business Wire, Good Guys Unveils Top 10 Holiday Electronics Gifts; Advances in Technology and Lower Prices Across the Industry Make for Great Deals on In-Demand Products This Season, Dec. 3, 2003, 3 pages.

NewsRoom. Bytestech Briefing, Feb. 19, 2002, 2 pages.

NewsRoom. CEA Announces 2007 Mark of Excellence Award Winners, Mar. 10, 2007, 3 pages.

US 11,388,532 B2

Page 22

(56)

References Cited

OTHER PUBLICATIONS

NewsRoom. CEDIA Abuzz with Trends—Integrators agree: The hot products at this year's expo are the start of a revolutionary move for the home automation market Oct. 9, 2006, 4 pages.

NewsRoom. Chicago Sun Times, Wireless stream player hits the right notes, Jan. 17, 2004, 3 pages.

NewsRoom. Computer Shopper, Entertainment geekly: the blueprints have been drawn for a connected home that fuses the PC with entertainment devices. All you have to do is install . . . , Nov. 1, 2003, 6 pages.

NewsRoom. Computer Shopper, Tunes all around, vol. 23; Issue 11, Nov. 1, 2003, 1 page.

NewsRoom. Computer Shopper, What we want: here's the gear our editors are wishing for this year, vol. 23; Issue 12, Dec. 1, 2003, 8 pages.

NewsRoom. Computer Shopper, Wi-Fi meets Hi-Fi: here's how to stream music, still images, and videos to your home entertainment center, Nov. 1, 2003, 5 pages.

NewsRoom. Custom Home, Easy listening: the hard disk is shaping the future of home entertainment. (The Wired House.), May 1, 2003, 3 pages.

NewsRoom. D-Link to Supply Omnipi with Exclusive New Antenna for Streaming Audio Throughout the House, Jan. 8, 2004, 3 pages.

NewsRoom. Easdown, R., System Heaven: Custom House Technofile, Nov. 24, 2003, 5 pages.

NewsRoom. Electronic House Expo Announces 2005 Multi-Room Audio/Video Award Winners. Nov. 18, 2005, 3 pages.

NewsRoom. Electronic House Expo Fall 2003 Exhibitor Profiles. Business Wire. Nov. 11, 2003, 7 pages.

NewsRoom. Electronic House Expo Spring 2004 Exhibitor Profiles. Business Wire. Mar. 10, 2004, 7 pages.

NewsRoom. Evangelista, B., Sound and Fury the Latest in Volume and Video at SF Home Entertainment Show, Jun. 6, 2003, 3 pages.

NewsRoom. Fallon et al. The Goods, Jul. 31, 2003, 2 pages.

NewsRoom. Future shocks—Connect: Your ultimate home-entertainment guide, Dec. 4, 2003, 3 pages.

NewsRoom. Greg, T., Rooms with a tune, Jul. 23, 2003, 3 pages.

NewsRoom. Hoffman, A., Computer networks start entertaining, Jun. 1, 2003, 3 pages.

NewsRoom. Home theater systems that are a real blast, New Straits. Jan. 6, 2000, 3 pages.

NewsRoom. IDG's PC World Announces Winners of the 2004 World Class Awards, Jun. 2, 2004, 3 pages.

NewsRoom. InfoComm 2004 Exhibitors vol. 7, Issue 5, May 1, 2004, 24 pages.

NewsRoom. International Herald Tribune, Transmitting media gets easier cheaply, Jan. 13, 2004, 2 pages.

NewsRoom. Latest electronic gadgets unveiled in Las Vegas: Wireless Devices take centre stage, Jan. 13, 2003, 4 pages.

NewsRoom. Linksys Extends Wireless Functionality to the Television, Jul. 14, 2003, 3 pages.

NewsRoom. Linksys Ships Wireless-B Media Link for Streamlined Delivery of Music From PC to Stereo Stream MP3s, Play Lists and Internet Radio to Any Stereo With the Wireless-B Media Link for Music, May 19, 2004, 3 pages.

NewsRoom. Linksys Wireless Home Products Are Hot Tech Gifts for 2003, Nov. 24, 2003, 3 pages.

NewsRoom. Living room expansion—The PC is going from word processor to entertainment hub for many households, Aug. 18, 2003, 4 pages.

NewsRoom. Macy's Returns to Electronics With Home Theater Boutique, Aug. 11, 2003, 2 pages.

NewsRoom. Many different ways to enjoy digital music library, Apr. 29, 2003, 3 pages.

NewsRoom. Marlowe, C., Pad gadgets: home is where the gear is, Oct. 20, 2003, 2 pages.

NewsRoom. Miller II, S. A., Technology gets simpler and smarter, Jan. 14, 2003, 2 pages.

NewsRoom. Miller, M., Adapted for flight: hands-on trial: wireless media adapters send digital entertainment soaring from PC to living room. Sep. 18, 2003, 3 pages.

NewsRoom. Miller, S., Creating Virtual Jukeboxes Gadgets Make Digital Music Portable. Aug. 19, 2003, 3 pages.

NewsRoom. Morning Call, Cutting the cord: Wi-Fi networks connect computers, TVs, DVD players and more without a clutter of wires, Feb. 2, 2003, 5 pages.

NewsRoom. Mossberg, W., PC—stored music sent without wires, Jan. 25, 2004, 2 pages.

NewsRoom. Nadel, B., Beam music, images from PC to stereo, TV: Linksys Wireless-B Media Adapter WMA11B. Nov. 1, 2003, 2 pages.

NewsRoom. Net Briefs, Jul. 21, 2003, 2 pages.

NewsRoom. NetWork World, The Toys of Summer, Sep. 1, 2003, 3 pages.

NewsRoom. Networked C300 Speaks Your Language. Apr. 6, 2003, 3 pages.

NewsRoom. New Camera—Now What? It's easy to go wild printing, sharing your digital photos. Oct. 16, 2003, 2 pages.

NewsRoom. New Products Allow Easier Access to Audio Video on Home Computers, Nov. 9, 2003, 3 pages.

NewsRoom. Newman, H., All-in-one Audio, Video Devices will be next big thing, Jan. 9, 2003, 3 pages.

NewsRoom. Norris, A., Come over to my house. Jan. 23, 2003, 3 pages.

NewsRoom. On the Printer Trail—Ream of new SMB models offers channel a range of sales hooks CRN Test Center finds. Oct. 13, 2003, 5 pages.

NewsRoom. One way to organize and weed Favorites, May 8, 2003, 3 pages.

NewsRoom. Outfitting your personal fortress of solitude, Mar. 14, 2002, 4 pages.

NewsRoom. Philadelphia Inquirer, Wireless solution for stereo sound, Aug. 7, 2003, 3 pages.

NewsRoom. Popular Science, Yamaha MusicCast an easy way to spread music around your home, Dec. 1, 2003, 2 pages.

Carnoy, David. Parrot DS1120 Wireless Hi-Fi Speaker System Review, Jul. 15, 2008, 4 pages.

Case et al. RFC 1157—A Simple Network Management Protocol, May 1990, 36 pages.

Cd30. Audio Control Document V4.2 Released! Sep. 18, 2003, 7 pages.

Cd30. Audio Control Protocol. Version 4.2. Sep. 18, 2003, 24 pages.

Cd30. Audio Stream Protocol Released. Mar. 9, 2004, 2 pages.

Cd30. Audio Stream Protocol: Version 18. Mar. 9, 2004, 13 pages.

Cd30 Backgrounder, 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Cd30. c100 Network MP3 Player. Quick Product Summary. 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Cd30. c200 Wireless Network MP3 Player. Quick Product Summary. 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Cd30. c300 Extended-Range Wireless Network MP3 Player. Quick Product Summary, 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Cd30 C300 Reviews. Digital Audio Receivers (DARs) Reviews by CNET, Mar. 30, 2003, 3 pages.

Cd30. Careers, Nov. 21, 2003, 1 page.

Cd30. Contact, Dec. 12, 2003, 1 page.

Cd30. Corporate Fact Sheet, 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Cd30 FAQs. What problem or need does cd30 address with their products? 2 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Cd30 Frequently-Asked Questions About cd30 Network MP3 Players, Dec. 12, 2003, 6 pages.

Cd30 Introduces Family of MP3 Players at this year's Consumer Electronics Show. Jan. 9-12, 2003 Las Vegas Convention Center, Feb. 12, 2004, 2 pages.

Cd30 Introduces Family of MP3 Players at this year's Consumer Electronics Show. Jan. 9-12, 2003 Las Vegas Convention Center, 2 pages.

US 11,388,532 B2

Page 23

(56)

References Cited

OTHER PUBLICATIONS

Cd30 Introduces Family of Wireless Network MP3 Players. Jan. 9-12, 2003 Las Vegas Convention Center, 2 pages.

Cd30. Logo page, 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Cd30 Management, Dec. 12, 2003, 1 page.

Cd30. Management Team, 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Cd30. Multi-Player Synchronization. Jan. 15, 2004, 4 pages.

Cd30 Network MP3 Player Models, Feb. 1, 2004, 1 page.

Cd30, Network MP3 Player, Product Manual. Copyright 2003, 65 pages.

Cd30 Network MP3 Player. Product Manual for c100, c200, and c300, 2003, 65 pages.

Cd30. Network MP3 Player. Quick Installation Guide, 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Cd30 Network MP3 Player Reviews. Feb. 1, 2004, 2 pages.

Cd30 Network MP3 Player Specifications. Feb. 2, 2004, 2 pages.

Cd30 Network MP3 Players, Nov. 18, 2003, 1 page.

Cd30 Network MP3 Players c100, c200, and c300, 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Cd30 Network MP3 Players: Stream music from your PC to your stereo, Nov. 18, 2003, 1 page.

Cd30 Network MP3 Players: Stream your MP3s to your stereo! May 24, 2003, 1 page.

Cd30. News, Reviews Nov. 21, 2003, 2 pages.

Cd30. Product Support. May 10, 2006, 17 pages.

Cd30 Product Support Forums. Forum Index, Apr. 15, 2003, 1 page.

Cd30 Product Support Forums. Forum Index, Jun. 18, 2003, 1 page.

Cd30 Product Support Forums. Forum Index, Feb. 2, 2004, 1 page.

Cd30. Product Support Forums. Multiple stereos—multiple cd30s—same music? Nov. 3, 2003, 2 pages.

Cd30. Network MP3 Player, Product Manual, 2003, 65 pages.

Cd30 Product Support Center, Nov. 19, 2003, 1 page.

CES: MP3-Player mit Pfiff, Jan. 13, 2003, 4 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Cheshire et al. RFC 3927—Dynamic Configuration of IPv4 Link-Local Addresses, 2005, 34 pages.

Cheshire et al. Zero Configuration Networking: The Definitive Guide. Dec. 2005, 288 pages.

Clipsal. Multi Room Audio Amplifier, User's Guide, V1.0, Dec. 2005, 28 pages.

Clipsal. Multi Room Audio Matrix Switcher, User's Guide, 560884, V1.0, Dec. 2005, 20 pages.

C-Media. CM102-A/102S USB 2CH Audio Controller, Data Sheet. Version 1.4.21 May 2003, 20 pages.

CNET. Wireless gizmo for PC music hits home, Sep. 30, 2003, 4 pages.

Compaq et al., Universal Serial Bus Specification, Revision 2.0, Apr. 27, 2000, 650 pages.

NewsRoom. PR Newswire, "Home Director Announces Availability of AudioPoint Receiver," Sep. 27, 2002, 4 pages.

NewsRoom. Preview the New EZ-Stream Wireless Audio Adapter at CES Jan. 8-11, 2004 BridgeCo Booth 19629, Jan. 7, 2004, 3 pages.

NewsRoom. Receiver Lets Stereo Join the Wi-Fi Band, Apr. 10, 2003, 2 pages.

NewsRoom. Rogers, P., Speaker Screech: The End Is Near, Apr. 8, 2003, 2 pages.

NewsRoom. San Jose Mercury News, Intel Fund to Invest in Digital Home, Jan. 7, 2004, 2 pages.

NewsRoom. Science & Technology: Wired for sound and video, Jan. 14, 2004, 3 pages.

NewsRoom, Sears reveals plans for new Eatons stores, Oct. 26, 2000, 3 pages.

NewsRoom. Seattle Times, Inventions real stars of the show as speeches predict future 100,000 browse 'superstore', Jan. 13, 2003, 4 pages.

NewsRoom, Sensible Sound, Goin' to a show-show, Surveying the Soundscape, Jun. 1, 2003, 8 pages.

NewsRoom. Shaw, K., Cool Tools, Jan. 20, 2003, 2 pages.

NewsRoom. Sheehan, W., More brains, less brawn. Sep. 1, 2003, 3 pages.

NewsRoom. Sidener, J., Everett Roach, Jul. 14, 2003, 2 pages.

NewsRoom. Sirius XM Companies Flood Cedia With New Products. Satellite Week. Sep. 15, 2003, 2 pages.

NewsRoom. Slim Devices Introduces Slimserver, Nov. 18, 2003, 2 pages.

NewsRoom. Slim Devices Introduces Slimserver. PR Newswire. Nov. 18, 2003, 2 pages.

NewsRoom. Slim Devices Introduces Squeezebox, Nov. 18, 2003, 2 pages.

NewsRoom. SMC Sponsors Canada's First Combined 'LAN Event' for Garners: DreamlanSMC, Jan. 15, 2004, 2 pages.

NewsRoom. SMC Sponsors Canada's First Combined 'LAN Event' for Garners: DreamlanSMC, Jan. 15, 2004, 3 pages.

NewsRoom. SMC Sponsors Home by Design Showhouse/Connected by Design Tour, Jan. 6, 2004, 3 pages.

NewsRoom. SMC Teams with Get Digital to Offer Free Music Conversion to Its Wireless Audio Adapter Users, Feb. 23, 2004, 3 pages.

NewsRoom. SMC teams with Get Digital to offer free music conversion to wireless users, Mar. 29, 2004, 1 page.

NewsRoom. SMC to Offer Home Entertainment Networking Bundle With New Intel Desktop Boards, Nov. 3, 2003, 3 pages.

NewsRoom. Sonic divide crumbles, 2001 WLNR 5430795. Sep. 5, 2001, 3 pages.

NewsRoom. Sound and Fury the Latest in Volume and Video at SF Home Entertainment Show Jun. 6, 2003, 3 pages.

NewsRoom. Sound Blaster Goes Wireless, Sep. 30, 2003, 3 pages.

NewsRoom. St. Paul Pioneer Press, Guide to Better Giving You Know These People. Why Is It So Hard to Buy for Them? Maybe It's Not: Everyone Need Technology. From the Littlest Angel to the Most Resistant Grandparent, Nov. 24, 2003, 6 pages.

NewsRoom. Sullivan, A., PluggedIn—Digital music migrates to the home stereo, Oct. 28, 2003, 3 pages.

NewsRoom. Tech along, Jan. 25, 2004, 3 pages.

NewsRoom. Technology Life in the iPad. Mar. 15, 2007, 5 pages.

NewsRoom. Televisions defy hi-tech trend for minimalism, Feb. 19, 2004, 3 pages.

NewsRoom. The 50 Best Music Systems, Dec. 13, 2003, 15 pages.

NewsRoom. The Age (Australia), Fresh Gadgets, 2001 WLNR 13294645, Sep. 7, 2001, 3 pages.

NewsRoom. The Dallas Morning News, Honorable mentions worth a look, Nov. 20, 2003, 2 pages.

NewsRoom. The Dallas Morning News, Innovations Hasten Trend of On-The-Go Music, Video, Technology, Jan. 16, 2003, 4 pages.

NewsRoom. The Dallas Morning News, Wireless Technology Focus of Consumer Electronics Show in Las Vegas, Jan. 9, 2003, 4 pages.

NewsRoom. The Goods What's New What's Hot, Nov. 9, 2000, 2 pages.

NewsRoom. The Next Ace in the Hole?—Epson HP set the stage for promising alternatives to wired solutions in vertical markets, Jan. 14, 2002, 3 pages.

NewsRoom. The Orange County Register, Holiday Season Brings Gift Ideas for Tech-Heads, Gadget Groupie, Dec. 8, 2003, 4 pages.

NewsRoom. The personal computer shows its creative side. Technology has discovered its next "killer app." Aug. 14, 2003, 3 pages.

NewsRoom. The top 25: computer shopper editors handpick this months best desktops notebooks digital audio receivers, handhelds, and software. Nov. 1, 2003, 3 pages.

NewsRoom. The toys of summer: Some cool tools that will get you through the lazy days. Sep. 1, 2003, 3 pages.

NewsRoom. The wide world of Wi-Fi: wherever you are, wireless networking is where it's at. Find out which Wi-Fi components will help you stay connected while . . . May 1, 2004, 7 pages.

NewsRoom. Ticker, Aug. 1, 2003, 2 pages.

NewsRoom. Washington Post, Ask the Computer Guy, Jan. 11, 2004, 2 pages.

NewsRoom. Yamaha Announces the Worlds First Wireless Home Music System. Aug. 11, 2003, 2 pages.

NewsRoom. Yamaha Musiccast an easy way to spread music around your home. Dec. 1, 2003, 2 pages.

US 11,388,532 B2

Page 24

(56)

References Cited

OTHER PUBLICATIONS

NewsRoom.Slim Devices Introduces Squeezebox. PR Newswire. Nov. 18, 2003, 2 pages.

Niles SI-1230. Systems Integration Amplifier. Installation & Operation Guide, 2009, 32 pages.

Niles SI-1260. Systems Integration Amplifier. Installation & Operation Guide, 2000, 32 pages.

Olenick, Doug. Networked MP3 Player Lineup Bows From cd3o. Jan. 9, 2003, 6 pages.

Parrot DS1120 User Manual, 2007, 22 pages.

Philips. Installation CD Content, software/ source code available via zip file ("Installation CD Content") published Sep. 15, 2004, 3 pages [online], [retrieved on Feb. 24, 2020]. Retrieved from the Internet URL : https://www.usa.philips.com/c-p/MCW770_37/-support.

Philips Leads Consumer Electronics Industry with 21 CES Innovation Awards. Business Wire. 2004 International CES, Jan. 3, 2004, 3 pages.

Philips. MC W7708. Wireless PC Link Quick Installation. Published Dec. 22, 2004, 8 pages.

Philips. MCW770 Leaflet. Remote Control MP3 Music from Your PC . . . Wirelessly. MP3 Micro Hi-Fi System with 5 CD Tray Changer. Published Mar. 2, 2004, 2 pages.

Philips. MCW770 Quick Use Guide. English version. Published Dec. 22, 2004, 4 pages.

Philips Media Manager 3.3.12.0004 Release Notes, last modified Aug. 29, 2006, 2 pages.

Philips. Media Manager Software—English version: PMM 3.3.12, software/ source code available via zip file ("Media Manager Software—English") published Sep. 15, 2004, 3 pages [online], [retrieved on Feb. 24, 2020]. Retrieved from the Internet URL : https://www.usa.philips.com/c-p/MCW770_37/-support.

Philips. PC Software version: V.12.1, software/ source code available via zip file ("PC Software") published Sep. 15, 2004, 3 pages [online], [retrieved on Feb. 24, 2020]. Retrieved from the Internet URL : https://www.usa.philips.com/c-p/MCW770_37/-support.

Philips. Wireless PC Link Micro MCW770 Custom Installation, User Manual, published Aug. 24, 2004, 61 pages.

Rocketfish Wireless Outdoor Speaker RF-RBWS02 User Guide, 2009, 33 pages.

Snarfed/p4sync. GitHub: A library and plugins for a few music players that (attempts to) synchronize playback across multiple computers, 2 pages [online]. [retrieved on Mar. 26, 2020]. Retrieved online URL: <https://github.com/snarfed/p4sync>.

Software & drivers. Micro Audio System MCW770/37. Philips. Copyright 2004-2020, 3 pages [online]. [retrieved on Feb. 24, 2020]. Retrieved from the Internet URL: https://www.usa.philips.com/c-p/MCW770_37/-support.

Sonos, Inc. v. Google LLC, Appendix A to Respondents' Response to the Complaint and Notice of Investigation, filed Feb. 27, 2020, 2 pages.

Sonos, Inc. v. Google LLC, Appendix B to Respondents' Response to the Complaint and Notice of Investigation, filed Feb. 27, 2020, 176 pages.

Sonos, Inc. v. Google LLC, Respondents' Response to the Complaint and Notice of Investigation, filed Feb. 27, 2020, 46 pages.

Sonos v. Google. Exhibit A to Respondents' Initial Invalidity Contentions dated Apr. 29, 2020, 194 pages.

Sonos v. Google. Respondents' Initial Invalidity Claim Charts for U.S. Pat. No. 10,439,896, Exhibits 1-16 and B, dated Apr. 29, 2020, 1102 pages.

Sonos v. Google. Respondents' Initial Invalidity Claim Charts for U.S. Pat. No. 10,209,953, Exhibits 1-10 and B, dated Apr. 29, 2020, 288 pages.

Sonos v. Google. Respondents' Initial Invalidity Claim Charts for U.S. Pat. No. 8,588,949, Exhibits 1-19 and B, dated Apr. 29, 2020, 280 pages.

Sonos v. Google. Respondents' Initial Invalidity Claim Charts for U.S. Pat. No. 9,195,258, Exhibits 1-10 and B, dated Apr. 29, 2020, 345 pages.

Sonos v. Google. Respondents' Initial Invalidity Claim Charts for U.S. Pat. No. 9,219,959, Exhibits 1-9 and B, dated Apr. 29, 2020, 344 pages.

Sonos v. Google. Respondents' Initial Invalidity Contentions dated Apr. 29, 2020, 200 pages.

Squeezebox by Logitech. Owner's Guide, 2007, 32 pages.

Squeezebox Duet Network Music System by Logitech. User Guide English (North America), 2008, 45 pages.

Squeezebox Network Music Player. Owner's Manual, Slim Devices, 2003, 22 pages.

Step-by-step P4 Connection. P4 Poster (without music), 5 pages [online], [retrieved on Mar. 26, 2020]. Retrieved from the Internet URL: https://snarfed.org/p4_poster/index.html.

Structured Media Components. Leviton Integrated Networks, last modified Apr. 10, 2006, 28 pages.

Support. Manuals & Documentation. Micro Audio System MCW770/37. Philips. Copyright 2004-2020, 3 pages. [online], [retrieved on Feb. 24, 2020]. Retrieved from the Internet URL: https://www.usa.philips.com/c-p/MCW770_37/-support.

Synchronizing mp3 playback. 3 pages [online]. [retrieved on Mar. 26, 2020]. Retrieved from the Internet URL: https://snarfed.org/synchronizing_mp3_playback.

Teirikangas, Jussi. HAVi: Home Audio Video Interoperability. Helsinki University of Technology, 2001, 10 pages.

TOA Electronics, Inc. DP-0206 Digital Signal Processor. DACsys 2000, 2001, 12 pages.

UPnP AV Architecture:0.83 for UPnP Version 1.0, Jun. 12, 2002, copyright 2000, 22 pages.

UPnP Forum. UPnP Device Architecture 1.0. Oct. 15, 2008, 80 pages.

Weverka et al. Windows XP Gigabook for Dummies. Wiley Publishing, Inc. 2004, 915 pages.

Wireless Home Audio Director. Wireless N Music Player with Integrated Amplifier DMC250. Datasheet. Linksys by Cisco. Fill Your Home with Music, 2008, 2 pages.

Yahoo Groups. Exstreamer. Barix Exstreamer. Access via Wayback Machine <http://groups.yahoo.com/group/exstreamer/> Dec. 22, 2013, 1 page.

Yamaha DME Designer 3.0 Owner's Manual; Copyright 2008, 501 pages.

Wired. Total Remote Control, Issue 11.06, Jun. 2003, 2 pages.

Wireless USB Adapter 11g CPWUA054, CPWUA054100, CPWUA054137, User Manual, Version: 1.0, Dec. 2003, 29 pages.

Yahoo Finance. BridgeCo Successfully Commercializes its BeBoB Application for the Music Industry: Four Manufacturers Demonstrate BeBoB-enabled Products at Namm 2004. Jan. 16, 2004, 3 pages.

Yamaha Digital Audio Server, MCX-1000, Owner's Manual, 1996-2002, 148 pages.

Yamaha MusicCAST Digital Audio Server MCX-1000 Owner's Manual, Copyright 1996-2002, 148 pages.

Yamaha, MusicCAST: Digital Audio Terminal MCX-A10, Owner's Manual. Jun. 4, 2003, 76 pages.

Yamaha Personal Receiver RP-U200 Operation Manual ("Operation Manual"), Copyright 1992-1997, 57 pages.

Zero Configuration networking with Bonjour—YouTube available via <https://www.youtube.com/watch?v=ZhtZJ6EsCXo> 3 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Zeroconf Working Group. Dynamic Configuration of IPv4 Link-Local Addresses, Internet-Draft, Jul. 8, 2004, 62 pages.

Zeroconf Working Group. Dynamic Configuration of IPv4 Link-Local Addresses, Internet-Draft, Jul. 1, 2004, 60 pages.

Zeroconf Working Group. Dynamic Configuration of IPv4 Link-Local Addresses, Internet-Draft, Jun. 7, 2004, 62 pages.

Zeroconf Working Group. Dynamic Configuration of Link-Local IPv4 Addresses, Internet-Draft, Feb. 16, 2004, 60 pages.

Zeroconf Working Group. Dynamic Configuration of Link-Local IPv4 Addresses, Internet-Draft, Mar. 31, 2004, 60 pages.

Acoustic Research. 900MHz Wireless Stereo Speakers Model AW871 Installation and Operation Manual, 2003, 15 pages.

Acoustic Research. 900MHz Wireless Stereo Speakers Model AW871 Installation and Operation Manual, 2007, 12 pages.

US 11,388,532 B2

Page 25

(56)

References Cited

OTHER PUBLICATIONS

Acoustic Research. Wireless Stereo Speakers with Auto-Tuning. Model AW877 Installation and Operation Manual, 2007, 13 pages.

Amazon.com: CD30 c300 Wireless Network MP3 Player (Analog/Digital): Home Audio & Theater, 5 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Amazon.com, Cisco-Linksys Wireless-B Music System WMLS11B, 5 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Amazon.com. Creative Labs Sound Blaster Wireless Music: Electronics, 7 pages, [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Apple. Airport Express, Setup Guide. May 20, 2004, 51 pages.

Apple. Airport Express, Setup Guide. 2004, 48 pages.

Apple Developer Connection. Browsing for Network Services. Nov. 12, 2002, 5 pages.

Apple. NewsRoom, Apple "Open Sources" Rendezvous. Sep. 25, 2002, 2 pages.

Apple. NewsRoom, Apple Ships New AirPort Express with AirTunes. Jul. 14, 2004, 3 pages.

Apple. NewsRoom, Apple Unveils AirPort Express for Mac & PC Users. Jun. 7, 2004, 3 pages.

Apple. NewsRoom, Developers Rapidly Adopt Apple's Rendezvous Networking Technology, Sep. 10, 2002, 3 pages.

Apple WWDC 2003 Session 105—Rendezvous—YouTube available via <https://www.youtube.com/watch?v=Ge5bsDijGWM> [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Audio Authority. Access EZ: Demonstration Network. Home Audio and Video System Installation Manual, 60 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Beatty et al. Web Services Dynamic Discovery WS-Discovery, Feb. 2004, 35 pages.

Blau, John. News Analysis, Wi-Fi Hotspot Networks Sprout Like Mushrooms, Sep. 2002, 3 pages.

Bluetooth Specification. Advanced Audio Distribution Profile (A2DP) Specification, 2007, 73 pages.

BoomBottle MM Blue Hatch 2-Pack. Blue Hatch Waterproof Dual Pairing Wireless Speakers each with Built-in-MagicMount, 4 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Bootcamp. Digital Music on Your Stereo System. Jan. 10, 2003, 1 page.

Bose Lifestyle SA-2 and SA-3 Stereo Amplifier Owner's Guide, 2004, 32 pages.

BridgeCo—Wireless Loudspeaker Product Information Version 1.4, Dec. 16, 2003, 5 pages.

BridgeCo. BridgeCo Launches UPnP-Compliant Wireless Audio Adapter: Moving More Digital Audio to More Devices in More Locations, Wirelessly. Sep. 16, 2003, 1 page.

BridgeCo. Company Overview. 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Networked Loudspeaker Product Information, 4 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Professional Loudspeaker—Product Information, 3 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. User Manual, Wireless Audio Adapter. Sep. 22, 2003, 34 pages.

BridgeCo. Vision. 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, 5 Factors, 5 Missing Functionalities. 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, 5 Key Functions. 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, BridgeCo Solution. 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, Consumer Benefits. 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, Consumer Demand. 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, ENA Applications. 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, ENA Deployment. 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, ENA Functionality. 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, ENA Market. 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, Entertainment Continuum. 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, Entertainment Network Adapter. 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, New Entertainment. 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, Technical Problems. 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Wireless Audio Adapter, Product Information. 3 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Wireless Audio Adapter Reference Design, Product Information. Version 1.3. Oct. 31, 2003, 2 pages.

BridgeCo. Wireless Loudspeaker, Product Information. 4 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Buffalo. Link Theater LT-H90 Media Player v1.0, 2003-2008, 38 pages.

Buffalo. LinkTheater PC-P3LWG/DVD, 59 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Business Wire. BridgeCo Adds Wireless Connectivity and Enhances Surround Sound Processing for New Generation Speakers. May 5, 2003, 2 pages.

C200 Wireless Network MP3 Player, Jun. 4, 2003, 1 page.

Introducing ROOMLINK Network Media Receiver—PCNA-MR10, Sony Vaio, 2003, 2 pages.

IPR Details—Apple Computer's Statement About IPR Claimed in draft-ietf-zeroconf-ip4v4-linklocal, Apr. 26, 2004, 3 pages.

Japanese Patent Office, English Translation of Office Action dated Jun. 2, 2020, issued in connection with Japanese Application No. 2017-211958, 6 pages.

Japanese Patent Office, Office Action and Translation dated Jun. 2, 2020, issued in connection with Japanese Patent Application No. 2017-211958, 9 pages.

Johnson, Ian. SMC EZ-Stream Universal Wireless Multimedia Receiver—The Globe and Mail, Dec. 3, 2003, 6 pages.

Kostiainen, K., Intuitive Security Initiation Using Location-Limited Channels. Helsinki University of Technology, Master's Thesis Apr. 14, 2004, 86 pages.

Kraemer, Alan. Two Speakers Are Better Than 5.1—IEEE Spectrum, May 1, 2001, 6 pages.

Linksys. 2.4GHz Wireless-B—User Guide Media Link for Music Model WML11B/WMLS11B, 68 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Linksys 2.4GHz Wireless-B—User Guide V2 Model WMA11B, 68 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Linksys. Quick Installation for Windows XP Only. Wireless-B Media Adapter, 2 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Linksys. Wireless Adapters, 2003, 2 pages.

Linksys. Wireless PrintServer, User Guide, Model No. WPS11 Version 3, 2002, 31 pages.

Linksys Wireless-B Media Adapter—User Guide V1 Model WMA11B, 2003, 32 pages.

Linksys. Wireless-B Media Adapter, Product Data, Model No. WMA11B, 2003, 2 pages.

Linksys. Wireless-B Media Adapter, WMA11B, 2003, 2 pages.

Ljungstrand et al. UBICOMP 2002, Adjunct Proceedings, Fourth International Conference on Ubiquitous Computing, 2002, 90 pages.

Logitech Slimserver. Server for Logitech Squeezebox Players. 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Logitech/slimserver. Github. 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Logitech/Slimserver. Github. Version 23 Release. May 19, 2002. 2 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

US 11,388,532 B2

Page 26

(56)

References Cited

OTHER PUBLICATIONS

Marchetti, Nino. EdgeReview, CES 2003 Home Network Entertainment, Jan. 28, 2003, 2 pages.

McGlaun, Shane. Best Buy unveils new Rocketboost RF-RBKIT whole home audio solution and more. Oct. 22, 2009, 7 pages.

MediaLounge Entertainment Network D-Link DSM-320 Wireless Media Player Manual v 1.0, 59 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Micro-Star International. 865PE Neo2. MS-6728v1.X ATX Mainboard. Version 1.1. Apr. 2003, 118 pages.

Miller II, Stanley. Technology gets simpler and smarter. JSOnline Milwaukee Journal Sentinel, Jan. 13, 2003, 3 pages.

Moses, B., Home Networking Using IEEE 1394 in Combination with Other Networking Technologies. Audio Delivery. The Changing Home Experience—AES 17 UK Conference 2002, 16 pages.

Muherim et al. On the Performance of Clock Synchronization Algorithms for a Distributed Commodity Audio System. Audio Engineering Society Convention Paper presented at 114th Convention Mar. 22-25, 2003, 12 pages.

Murph, Darren. Rocketfish Wireless Whole Home Audio System Cuts the Cord on All Your Speakers. Engadget. Oct. 23, 2009, 9 pages.

Musica MU4602. Audio Distribution System. Data Sheet, 2004, 2 pages.

MusicCAST. Interactive Wireless. Home Music Network System, 6 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

MusicCAST System—About the Quick Manual, 1999, 7 pages.

NetGear. User's Manual for the MP101 Digital Music Player, Version 1.2, May 2004, 48 pages.

NetStreams. Musica MU4602 Audio Distribution System. Data Sheet. Copyright 2004, 2 pages.

NetStreams. Panorama PAN6400 Multi-Room Video & Control System Installation Guide, Jan. 1, 2006, 64 pages.

NetStreams Product Catalog 2003-2004. Creating the Future of Home Entertainment Today 20 pages.

Network Working Group. Zeroconf Multicast Address Allocation Protocol, Internet-Draft, Oct. 22, 2002, 14 pages.

NewRoom. Sirius, XM Companies Flood Cedia with New Products, Sep. 15, 2003, 2 pages.

NewRoom. SMC Ships New EZ-Stream Universal 80211ag Wireless Router, Jan. 14, 2004, 3 pages.

NewsRoom. AP DataStream, Wall Street Journal Digest, Jan. 15, 2004, 3 pages.

NewsRoom. AP Online, AP Technology NewsBrief. Dec. 26, 2003, 2 pages.

NewsRoom. AP Online, AP Technology NewsBrief. Dec. 27, 2003, 2 pages.

NewsRoom. Belleville News Democrat, Tunes, Pictures From Computer Can Be Sent to Your TV, Stereo, Dec. 27, 2003, 2 pages.

NewsRoom. BridgeCo Successfully Concludes Second Financing Round of US \$133 Million, Business Wire, Jan. 9, 2003, 3 pages.

NewsRoom. Business Line, Cisco arm rolls out products for SOHO. Nov. 5, 2003, 2 pages.

NewsRoom. Business Wire, BridgeCo Adds Wireless Connectivity and Enhances Surround Sound Processing for New Generation Speakers. May 5, 2003, 3 pages.

NewsRoom. Business Wire, BridgeCo Launches Entertainment Network Adapter at CES2003, Jan. 9, 2003, 3 pages.

NewsRoom. Business Wire, BridgeCo Launches Entertainment Network Adapter for Pro Audio at NAMM Show, Jan. 16, 2003, 3 pages.

NewsRoom. Business Wire, BridgeCo Opens USA Business Development HQ in Silicon Valley and Expands Management Team, Mar. 15, 2004, 3 pages.

NewsRoom. Business Wire, BridgeCo Releases Silicon and Firmware Platform Compatible with Microsoft Windows Media Connect and Windows Media DRM Technology. May 3, 2004, 3 pages.

NewsRoom. Business Wire, CSR and BridgeCo Launch Design for New Generation Wireless Speakers; Transforms Traditional Speakers into Portable Internet Radio, May 6, 2003, 3 pages.

NewsRoom. Business Wire, Epson Announces the EPSON Stylus Photo 900: the First Photo Printer Under \$200 to Print Directly Onto CDs and DVDs; New Printer Offers a Complete Printing Solution for Digital Lifestyles, Apr. 16, 2003 4 pages.

Olenick, Doug. Twice, Networked MP3 Player Lineup Bows from cd3o, Jan. 9, 2003, 2 pages.

Omnifi A Simple Media Experience. DMSI User Manual, Jul. 2003 36 pages.

Omnifi DMS1 Wi-Fi Media Receiver p. 2, Sound & Vision, Copyright 2020, 7 pages.

Omnifi DMS1 Wi-Fi Media Receiver p. 3, Sound & Vision, Copyright 2020, 5 pages.

Parrot—All Products—Bluetooth Hands Free Car Kits, Oct. 21, 2008, 3 pages.

Parrot DS1120—Wireless Hi-Fi Stereo Sound System, Nov. 22, 2008, 3 pages.

Pinnacle ShowCenter. Pinnacle Systems, Mar. 2005, 132 pages.

Pohlmann, Ken. Omnid DMS1 Wi-Fi Media Receiver. Sound & Vision, Oct. 20, 2003, 7 pages.

Publishing Network Services. Apple Developer Connection. Rendezvous Network Services: Publishing Network Services, Nov. 12, 2002, 6 pages.

Rendezvous Network Services: Resolving and Using Network Services. Apple Developer Connection, Nov. 12, 2002, 5 pages.

Rendezvous Network Services: About Rendezvous. Apple Developer Connection, Nov. 12, 2002, 5 pages.

Rockefish. Digital Wireless Speakers. RF-WS01/WS01-W/WS02 User Guide, 2008, 28 pages.

Rockefish. Wireless Outdoor Speaker. RF-RBWS02 User Guide, 2009, 33 pages.

Roku SoundBridge Network Music Player User Guide v2.5, 2006, 40 pages.

Rose, B., Home Networks: A Standards Perspective. In-Home Networking, IEEE Communications Magazine, Dec. 2001, 8 pages.

Schertel, Barry. Griffin Evolve Wireless iPod Speakers, Feb. 18, 2008, 4 pages.

Shannon, Victoria. The New York Times, Company supports Apple: Philips sets up a 'Rendezvous', Sep. 11, 2002, 2 pages.

Sieborger, D. R., Multiprotocol Control of Networked Home Entertainment Devices, Feb. 2004, 131 pages.

SMC EZ-Stream Universal Wireless Multimedia Receiver—NextUp, Dec. 5, 2003, 4 pages.

SMC Network. SMCWMR-AG—EZ-Stream Universal Wireless Multimedia Receiver, Dec. 3, 2003, 2 pages.

SMC Networks Consumer Site. About SMC: Press Release Details, Feb. 21, 2004, 2 pages.

SMC Networks Consumer Site. Products: Home Entertainment Networking, Dec. 10, 2003, 1 page.

SMC Networks Consumer Site. Products: Home Entertainment Networking, Feb. 7, 2004, 1 page.

SMC Networks Consumer Site. Support: Support Center Downloads, Feb. 7, 2004, 1 page.

SMC Networks Ez-Stream Universal 2.4GHz/5GHz Wireless Multimedia Receiver. SMCWMR-AG Users Manual, 60 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

SMC Networks. SMCWAA-B EZ-Stream 2.4GHz Wireless Audio Adapter. User Guide, 2004, 51 pages.

SMC Networks. SMCWMR-AG EZ-Stream Universal Wireless Multimedia Receiver. User Guide, 2003, 43 pages.

SMC-GT1255FTX-SC EZ Card. SMC Networks: What's New, Feb. 5, 2004, 7 pages.

Sony. Home Theatre System. HT-DDW790 and HT-DDW685 Operating Instructions, 2007, 64 pages.

Sony Shows Off Range of Home LANs, Dec. 15, 2000, 1 page.

Sound Blaster, Wireless Music. User's Guide: Creative Sound Blaster Wireless Music Version 1.0, Aug. 2003, 66 pages.

Space.com. Tech Today: News about the latest gizmos and gadgets conveniently available on Earth, Feb. 14, 2004, 2 pages.

US 11,388,532 B2

Page 27

(56)

References Cited**OTHER PUBLICATIONS**

Steve Jobs introduces AirPort Express All Things D2 (2004)—YouTube available via https://www.youtube.com/watch?v=hq5_P90pOqo 3 pages, [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Technology. cd30 is developing products which implement NAVOS, allowing consumers to get better utility out of their home media libraries. Nov. 21, 2003, 1 pages.

Thaler et al. Scalability and Synchronization in IEEE 1394—Based Content-Creation Networks. Audio Engineering Society Convention Paper 5461, Sep. 21-24, 2001, 16 pages.

Tom's Hardware Guide: Nachrichten. Nachrichten vom Jan. 10, 2003, 3 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Trask, Simon. NewsRoom, Pro Sound News Europe, Bluetooth to drive wireless speakers, vol. 18; Issue 6, Jun. 1, 2003, 2 pages.

Tsai et al. SIM-based Subscriber Authentication for Wireless Local Area Networks, 2003, 6 pages.

United States Patent and Trademark Office, U.S. Appl. No. 60/379,313 filed May 9, 2002, entitled "Audio Network Distribution System," 49 pages.

United States Patent and Trademark Office, U.S. Appl. No. 60/379,313, filed May 9, 2002, entitled "Audio Network Distribution System," 50 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Urien et al. EAP-TLS Smartcards, from Dream to Reality, 4th Workshop on Applications and Services in Wireless Networks, Aug. 9, 2004, 19 pages.

Valtchev et al. In Home Networking, Service Gateway Architecture for a Smart Home, Apr. 2002, 7 pages.

Wi-Fi Alliance. Wi-Fi Protected Setup Specification, Version 1.0h, Dec. 2006, 110 pages.

Wildstrom, Stephen. At CES, Cool Tech Still Rules. BusinessWeek Online, Jan. 13, 2003, 3 pages.

Wilkins, N., SMC SMCWMR-AG EZ-Stream (wireless) review. CNET, Feb. 8, 2004, 3 pages.

Wilkins, N., SMC SMCWMR-AG EZ-Stream (wireless) review. CNET, Feb. 8, 2004, 5 pages.

Williams, A. Zero Configuration Networking. Requirements for Automatic Configuration of IP Hosts, Sep. 19, 2002, 19 pages.

Williams, Stephen. NewsRoom, Going Wireless, Oct. 21, 2003, 2 pages.

Williams, Stephen. NewsRoom, Newsday, As Wireless Evolves, Compatibility is Key, Jul. 21, 2003, 3 pages.

Windows XP: The Complete Reference—Chapter 19 Working with Sound, 6 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

CobraNet, Programmer's Reference. Version 2.5. Feb. 2006, 147 pages. [Retrieved on Aug. 31, 2020].

CobraNet, Wikipedia. Dec. 9, 2007, 7 pages [retrieved on Aug. 31, 2020]. [Retrieved from the Internet: <https://en.wikipedia.org/wiki/CobraNet>].

European Patent Office, Summons to Attend Oral Proceedings dated Sep. 7, 2020, issued in connection with European Application No. 17198867.8, 10 pages.

Final Office Action dated Aug. 24, 2020, issued in connection with U.S. Appl. No. 16/773,966, filed Jan. 27, 2020, 22 pages.

Final Office Action dated Oct. 26, 2020, issued in connection with U.S. Appl. No. 16/297,991, filed Mar. 11, 2019, 16 pages.

Final Office Action dated Oct. 26, 2020, issued in connection with U.S. Appl. No. 16/670,109, filed Oct. 31, 2019, 17 pages.

Final Office Action dated Aug. 4, 2020, issued in connection with U.S. Appl. No. 16/422,160, filed May 24, 2019, 12 pages.

Non-Final Office Action dated Sep. 22, 2020, issued in connection with U.S. Appl. No. 15/405,931, filed Jan. 13, 2017, 17 pages.

Non-Final Office Action dated Jul. 9, 2020, issued in connection with U.S. Appl. No. 16/670,109, filed Oct. 31, 2019, 18 pages.

Notice of Allowance dated Aug. 19, 2020, issued in connection with U.S. Appl. No. 16/383,561, filed Apr. 12, 2019, 8 pages.

RF-RBWS02 Wireless Outdoor Speaker, Quick Setup Guide, RocketBoost Wireless, 2010, 4 pages. [produced by Google in Inv. No. 337-TA-1191 on Sep. 4, 2020].

Rocketfish—Rocket Boost Wireless, 13pages [produced by Google in Inv. No. 337-TA-1191 on Sep. 4, 2020].

Rocketfish. Manuals & Support, RF-RBWS02, Oct. 10, 2010, 2 pages. [produced by Google in Inv. No. 337-TA-1191 on Sep. 4, 2020].

Rocketfish. Wireless Outdoor Speaker RF-RBWS02, Quick Setup Guide, 2 pages. [produced by Google in Inv. No. 337-TA-1191 on Sep. 4, 2020].

Search Results for Rocketfish Outdoor Wireless Speaker pdf, Google. com, 2 pages. [produced by Google in Inv. No. 337-TA-1191 on Sep. 4, 2020].

Sonos, Inc. v. Google LLC, Expert Report of Dr. Kevin Jeffay, Ph.D., Regarding the Invalidity of U.S. Pat. No. 9,219,959 [Redacted] dated Oct. 23, 2020, 195 pages.

Sonos, Inc. v. Google LLC. Order 20: Construing the Terms of the Asserted Claims of the Patents at Issue dated Sep. 25, 2020, 53 pages.

Sonos, Inc. v. Google LLC. Respondents' Final Invalidity Claims Charts for U.S. Pat. No. 9,219,959, Exhibits 1-9 and B, dated Sep. 4, 2020, 525 pages.

Sonos, Inc. v. Google LLC. Respondents' Final Invalidity Contentions [Redacted] dated Sep. 4, 2020, 261 pages.

Wireless Speakers. Best Buy, Mar. 4, 2010, 4 pages. [produced by Google in Inv. No. 337-TA-1191 on Sep. 4, 2020].

Notice of Allowance dated Nov. 23, 2020, issued in connection with U.S. Appl. No. 16/422,160, filed May 24, 2019, 8 pages.

Sonos, Inc. v. Google LLC , Complainant Sonos, Inc.'s Pre-Hearing Brief [Redacted Jan. 29, 2021] dated Jan. 22, 2021, 513 pages.

Sonos, Inc. v. Google LLC , Direct Witness Statement of Kevin Jeffay, Ph.D. [Redacted Jan. 28, 2021] dated Dec. 18, 2020, 282 pages.

Sonos, Inc. v. Google LLC , Rebuttal Expert Report of Kevin C. Almeroth [Redacted Jan. 29, 2021] dated Nov. 13, 2020, 547 pages.

Sonos, Inc. v. Google LLC , Rebuttal Witness Statement of Kevin C. Almeroth [Redacted Jan. 29, 2021] dated Jan. 8, 2021, 735 pages.

Sonos, Inc. v. Google LLC , Respondent Google's Pre-Trial Brief [Redacted Jan. 29, 2021] dated Jan. 22, 2021, 516 pages.

Sonos, Inc. v. Google LLC , WDTX Case No. 6:20-cv-00881, Google's Answer and Counterclaims; dated Jan. 8, 2021, 39 pages.

Adagio AES Entertainment System. Crestron. Quickstart Guide, 2008, 24 pages. [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

AES. Adagio Entertainment System. Crestron (https://www.crestron.com/getmedia/88d5f05f-8832-43a4-57c5-31e216a579e7/ss_aes_1), 2011, 5 pages.[produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Altunian, Gary. Sonance DAB1 Distributed Audio System. Sound and Vision, <https://www.soundandvision.com/content/sonance-dab1-distributed-audio-system>, Jul. 5, 2006, 6 pages. [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

US 11,388,532 B2

Page 28

(56)

References Cited

OTHER PUBLICATIONS

Atkinson, John. Sonos ZP80 & ZP100 WiFi Music, <https://www.stereophile.com/midiservers/1006sonos/index.html>, Sep. 17, 2006, 5 pages [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Atkinson, John. Sonos ZP80 & ZP100 WiFi Music System. Oct. 2006. Wayback Machine (<https://web.archive.org/web/2006112065612/http://stereophile.com/midiservers/1006sonos/index.html>), 3 pages, [produced by Google in NDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Audio Review. Bose Lifestyle 50 Mini Systems, Nov. 1, 2012, 5 pages, [produced by Google in WDTX Case No. 3:20-cv-00881 on Mar. 5, 2021].

AVC. Sonos Rocks. Mar. 19, 2006, 4 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Avforums. Is Crestron Just Overpriced? <https://www.avforums.com/threads/is-crestron-just-overpriced.280596/>, Dec. 27, 2005, 7 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Bose. Freespace E4 Series II Business Music System. Owner's Guide, 2004, 75 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Bose. The Bose Lifestyle Amplifier, Owner's Guide, Jan. 4, 2002, 22 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

C4630 SE Home Audio System Instruction Manual, 60 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Carnoy et al. Sonos Digital Music System (ZP100 bundle) review: CNET <https://www.cnet.com/reviews/sonos-digital-music-system-zp100-bundle-review/> (all pages), Feb. 14, 2005, 5 pages, [produced by Google in WDTX Case No. 3:20-cv-00881 on Mar. 5, 2021].

Carry a Tune From Room to Room. CNN Money. Mar. 21, 2005, 2 pages, [produced by Google in WDTX Case No. 3:20-cv-00881 on Mar. 5, 2021].

Crestron Adagio Wins Top Honors At CEDIA. Sound and Video Contractor, <https://www.svconline.com/news/crestron-adagio-wins-top-honor-cedia-366252>, Sep. 26, 2006, 4 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Crestron. Adagio Label Strip Installation. Jun. 2006. Wayback Machine, https://web.archive.org/web/20061017120818/http://www.crestron.com/downloads/pdf/product_misc/ig_adagio_label_strip.pdf, 2 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Crestron AES Operations Guide. <https://www.manualslib.com/manual/224672/Crestron-Aes.html?page=2#manual>. 2006, 68 pages [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Crestron CEN-IDOC. Interface for Apple iPod. Operations Guide (<http://pdfstream.manualsonline.com/2/225dd15f-5ce8-49e3-9363-2e28eb1f630b.pdf>), 2006, 24 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Crestron. Crestron Adagio AAE. Audio Expander. Operations Guide. Copyright 2006. Wayback Machine https://web.archive.org/web/20061017120818/http://www.crestron.com/downloads/pdf/product-manuals/aae_aaei.pdf, 20 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Crestron. The Crestron Experience. Commercial Product Guide, 19 pages. Wayback Machine https://web.archive.org/web/20060306055025/http://www.crestron.com/downloads/pdf/product_brochures/the_crestron_experience-commercial.pdf [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Crestron. The Crestron Experience. New Product Guide, Dec. 2005, 17 pages. Wayback Machine https://web.archive.org/web/20060306055306/http://www.crestron.com/downloads/pdf/product_brochures/the_crestron_experience-residential.pdf [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Crestron. Total Home Technology. Copyright 2005. The Wayback Machine, https://web.archive.org/web/20060210021304/http://www.crestron.com/downloads/pdf/product_brochures/total_home_technology.pdf, 36 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

CRN Staff. Review: Sonos ZP80. Jul. 31, 2006, 5 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

DAB1 Specifications. Sonance. https://web.archive.org/web/20060311225204/http://www.sonance.com/image_data/downloads/dab1_brochure.pdf, 2004, 4 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Digital Camera Superguide. PC Magazine. Jun. 27, 2006, 96 pages, [produced by Google in WDTX Case No. 6:20-ov-00881 on Mar. 5, 2021].

Duchon et al. "Cyber physical multimedia systems: A pervasive virtual audio community." Int. Conf. on Advances in Multimedia 2011, 4 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Forbes. Sonos Zone Player, May 10, 2005, 16 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Frakes, Dan. Review: Sonos Digital Music System. Macworld. Feb. 6, 2005, 10 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Frakes, Dan. Review: Sonos ZonePlayer 80. PCWorld. May 25, 2006, 9 pages, <https://www.pcworld.com/article/1051050/zp80.html> [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Frauenfelder, Mark. Sonos Music System Is Fantastic. Aug. 8, 2006, 5 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Home Audio Matrix/6 zone Distribution Amp + Arduino for a few hundly Forum. www.OCAU.com. <https://forums.ocau.com/au/threads/home-audio-matrix-6-zone-distribution-amp-arduino-for-a-few-hundly.1151649/>, Dec. 23, 2014, 9 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Home Director. Crunchbase <https://www.crunchbase.com/organization/home-director>, 2 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Kobrin, Mike. Sonos ZonePlayerSO. <https://uk.pcmag.com/media-hubs-receivers/25495/sonos-zoneplayer-80>, Jun. 1, 2006, 7 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Laurence, Andrew. Audio Bliss: Sonos Digital Music System. TidBITS, <https://tidbits.com/2006/01/23/audio-bliss-sonos-digital-music-system/> (<https://web.archive.org/web/20200813063734/https://tidbits.com/2006/01/23/audio-bliss-sonos-digital-music-system/>), Jan. 23, 2006, 6 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Marco/presets. Sonos forum—<https://en.community.sonos.com/music-services-and-sources-228994/macro-presets-4528>, 13 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Nagel et al. The Family Intercom: Developing a Context-Aware Audio Communication System. Ubicomp 2001, 22 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Palenchar, Joseph. Sonos Delivers 2-Zone Wireless Audio, Apr. 24, 2006, 4 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Playlistmag.com. <http://playlistmag.com/reviews/2005/02/sonos/index.php> (<https://web.archive.org/web/20050311045455/https://playlistmag.com/reviews/2005/02/sonos/index.php>), 1 page, [produced by Google in NDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Pogue, David. Be the Maestro of the House, with a Remote. Circuits. Apr. 20, 2006, 7 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sciacca, John. Crestron Adagio Entertainment System. Sound & Vision, <https://www.soundandvision.com/content/crestron-adagio-entertainment-system>, Oct. 3, 2006, 4 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonance. DAB1 Distributed Audio System Installation Instructions, 2004, 48 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

US 11,388,532 B2

Page 29

(56)

References Cited

OTHER PUBLICATIONS

Sonance. DAB1 Distributed Audio System Instruction Manual, 2007, 68 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonance. DAB1 Distributed Audio System Instruction Manual, 74 pages, [produced by Google in WDTX Case No. 3:20-cv-00881 on Mar. 5, 2021].

Sonance. Instruction Manual. Sonance iPort, 2004, 8 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonance. Sonance Product Guide, 2010, 189 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonance. Sonance Product Guide, iPort, 2015, 163 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonos Digital Music System Controller Setup Guide. Version: 050601, Jun. 2005, 46 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonos Digital Music System Cradle Setup Guide. Version: 050801, Aug. 2005, 10 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonos Digital Music System. Loudspeaker Setup Guide. Version: 050801, Aug. 2005, 40 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonos Digital Music System Quick Setup Instructions, 2004, 1 page, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonos Digital Music System Setup. Version: 050601, Jun. 2005, 53 pages, [produced by Google in WDTX Case No. 3:20-cv-00881 on Mar. 5, 2021].

Sonos Digital Music System User Guide, Version:0504, Apr. 2005, 114 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonos Digital Music System User Guide, Version:060101 Jan. 2006,135 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonos Digital Music System. Zoneplayer ZP80 Setup Guide, Version: 060101, Jan. 2006, 74 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonos Digital Music System. ZP80 Bundle Quick Setup Instructions, 2004, 1 page, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonos Digital Music System ZP80 Bundle, Quick Setup Instructions, 2004-2006, 1 page, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonos Interface Video. YouTube. Nov. 28, 2006. <https://www.youtube.com/watch?v=u5UhahhOToQ>, 5 pages. [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonos. It distributes. It plays. It amplifies. <http://web.archive.org/web/20050325023308/http://www.sonos.com/products/zoneplayer/>, Wayback Machine Apr. 6, 2005, 1 page, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonos. It's like having a giant jukebox of music at your fingertips. <http://web.archive.org/web/20050327035400/http://www.sonos.com/products/controller/>, Wayback Machine Apr. 6, 2005, 1 page, [produced by Google in WDTX Case No. 3:20-cv-00881 on Mar. 5, 2021].

Sonos. Loudspeaker Specs. Wayback Machine. <http://web.archive.org/web/20050406171338/http://www.sonos.com/products/loudspeaker/specs.htm>, 2 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonos Multi-Room Music System User Guide, 2004, 299 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonos Multi-Room Music System. ZonePlayer 90 Setup Guide. Version: 080501, 2004, 222 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonos. No hex keys. No WEP keys. No SSID. 2004-2005. <http://web.archive.org/web/20050404062525/http://www.sonos.com/>

products/how sonos works.htm, Wayback Machine Apr. 4, 2005, 1 page, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonos. Order and buy your digital stereo, audio and music system at Sonos.com. Sonos Digital Music System Introductory Bundle. The Wayback Machine (<http://web.archive.org/web/20050403223214/http://www.sonos.com/store/?tref=gproducts>), 2 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonos. Play any song. In any room. From anywhere. 2004-2005, <http://web.archive.org/web/20050330091453/http://www.sonos.com/products/?tref=ghome>, Wayback Machine Mar. 30, 2005, 1 page, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonos. Play any song. In any room. From anywhere. 2004-2005. <http://web.archive.org/web/20050404104245/http://www.sonos.com/products/index.htm>, Wayback Machine Apr. 4, 2005, 1 page, [produced by Google in WDTX Case No. 3:20-cv-00881 on Mar. 5, 2021].

Sonos System Review. HomeTheater VIEW, https://www.hometheaterview.com/hometheaterview/2006/05/sonos_system_re.html, May 1, 2006, 5 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonos Webpage. Wayback Machine (<http://web.archive.org/web/20050320050615/sonos.com/>) dated Mar. 22, 2005, 1 page.

Sonos ZonePlayer 100 (ZP100). Spec Sheet, 2006, 2 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Sonos ZP80 & ZP100 WiFi Music System p. 2. Media Server Reviews. Stereophile. 5 p. [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Tested the Adagio. Remote Central Forums (<http://www.remote-central.com/cgi-bin/mboard/rc-custom/thread.cgi?3523>), May 20, 2006, 6 pages [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

“The Advent of Multi-Room Digital Music”, Envisioneering Group White Paper, An Overview of the Sonos Digital Music System, Jan. 2005, 15 pages.

TOA. System Management Amplifier. Instruction Manual VM-2120/M-2240. TOA Corporation, 72 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Virtual Zones and Zone Grouping. Sonos forums—<https://en.community.sonos.com/music-services-and-sources-228994/virtual-zones-and-zone-grouping-14604>, 7 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Welcome to the Sonos Community. Sonos Forums (e.g., <https://en.community.sonos.com/>), 2004-2006, 3 pages. [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Yamaha MusicCAST Quick Manual. 191 pages, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Yves. Avega’s IP Speakers. CES 2006: Pictures of Hot Products. Legit Reviews. Jan. 9, 2006, <https://www.egireviews.com/ces-2006-pictures-of-hot-products-288/2>, [produced by Google in WDTX Case No. 6:20-cv-00881 on Mar. 5, 2021].

Non-Final Office Action dated Jun. 14, 2021, issued in connection with U.S. Appl. No. 16/351,170, filed Mar. 12, 2019, 14 pages.

Sonos, Inc. v. Google LLC, Declaration of Douglas C. Schmidt filed in Western District of Texas Waco Division Case No. 6:20-cv-881-ADA, dated Apr. 27, 2021, 40 pages.

Sonos, Inc. v. Google LLC, Declaration of Kevin C. Almeroth filed in Western District of Texas Waco Division Case No. 6:20-cv-881-ADA, dated Apr. 27, 2021, 29 pages.

Sonos, Inc. v. Google LLC, Defendant Google LLC’s Response Claim Construction Brief filed in Western District of Texas Waco Division Case No. 6:20-cv-881-ADA, dated Jun. 1, 2021, 35 pages.

Sonos, Inc. v. Google LLC, Defendant Google LLC’s Sur-Reply Claim Construction Brief filed in Western District of Texas Waco Division Case No. 6:20-cv-881-ADA, dated Jun. 29, 2021, 20 pages.

Sonos, Inc. v. Google LLC, Dr. Kyriakakis’ Declaration in Support of Google LLC’s Responsive Claim Construction Brief filed in Western District of Texas Waco Division Case No. 6:20-cv-881-ADA, dated Jun. 1, 2021, 233 pages.

US 11,388,532 B2

Page 30

(56)

References Cited

OTHER PUBLICATIONS

Sonos, Inc.v. Google LLC, Exhibit 26: Rebuttal Declaration of Kevin C. Almeroth filed in Western District of Texas Waco Division Case No. 6:20-cv-881-ADA, dated Jun. 15, 2021, 258 pages.

Sonos, Inc.v. Google LLC, Exhibit 27: Reply Declaration Douglas C. Schmidt filed in Western Districtof Texas Waco Division Case No. 6:20-cv-881-ADA, dated Jun. 15, 2021, 162 pages.

Sonos, Inc.v. Google LLC, Plaintiff Sonos, Inc.'s Opening Claim Construction Brief filed in Western District of Texas Waco Division Case No. 6:20-cv-881-ADA, dated Apr. 27, 2021, 38 pages.

Sonos, Inc.v. Google LLC, Plaintiff Sonos, Inc.'s Reply Claim Construction Brief filed in Western District of Texas Waco Division Case No. 6:20-cv-881-ADA, dated Jun. 15, 2021, 22 pages.

Sonos, Inc.v. Google LLC, Markman Hearing Transcript, Civil Action No. W-20-CV-881, Aug. 10, 2021, 86 pages.

Allbritton, Christopher. Slim Devices. Popular Mechanics, Mar. 2004, 3 pages. Available at: <https://books.google.com/books?id=5NIDAAAAMBAJ&pg=RA1-PA34&dq=%22slim+devices%22+synchronized&hl=en&sa=X&ved=2ahUKEwicp7v96PLyAhXrN30KHRJDcvQ6AgCEAI#v=onepage&q&f=false>. [produced by Google in WDTX Case No. 6:20-cv-00881 on Sep. 10, 2021].

Headworx. Multiroom Audio. Mar. 4, 2007, <https://web.archive.org/web/20070528122735/http://headworx.slupik.com/2007/03/multiroom-audio.html>, 1 page. [produced by Google in WDTX Case No. 6:20-cv-00881 on Sep. 10, 2021].

International Trade Commission Remote Hearing for Case 337-TA-1191 Transcripts vols. 1-5, dated Sep. 22, 2021-Sep. 26, 2021, 794 pages.

Non-Final Office Action dated Oct. 28, 2021, issued in connection with U.S. Appl. No. 16/926,975, filed Jul. 13, 2020, 19 pages.

Notice of Allowance dated Sep. 27, 2021, issued in connection with U.S. Appl. No. 16/279,991, filed Jan. 27, 2020, 7 pages.

Notice of Allowance dated Sep. 27, 2021, issued in connection with U.S. Appl. No. 16/773,966, filed Jan. 27, 2020, 8 pages.

Roku. Synchronized Playback. Forums. Jul. 19, 2005, <https://forums.roku.com/viewtopic.php?t=3692>, 6 pages. [produced by Google in WDTX Case No. 6:20-cv-00881 on Sep. 10, 2021].

Slim Devices. Beginners Guide. 2002-2005, <https://web.archive.org/web/20060113082526/http://wiki.slimdevices.com/index.cgi?BeginnersGuide>, 3 pages. [produced by Google in WDTX Case No. 6:20-cv-00881 on Sep. 10, 2021].

Slim Devices. Confused by all the new network MP3 players? Feb. 7, 2005,https://web.archive.org/web/20050207112450/http://www.slimdevices.com/pi_moreinfo.html, 1 page. [produced by Google in WDTX Case No. 6:20-cv-00881 on Sep. 10, 2021].

Slim Devices. Free your music! Feb. 7, 2005, https://web.archive.org/web/20050207012626/http://www.slimdevices.com/pi_overview.html, 2 pages. [produced by Google in WDTX Case No. 6:20-cv-00881 on Sep. 10, 2021].

Slim Devices. Frequently Asked Questions. 2002-2005, https://www.web.archive.org/web/20050714032953/http://www.slimdevices.com/pi_faq.html#about2-hwsync, 18 pages. [produced by Google in WDTX Case No. 6:20-cv-00881 on Sep. 10, 2021].

Slim Devices. Remote Control, 2002-2004. https://web.archive.org/web/20050207113013/http://www.slimdevices.com/pi_remotes.html, 3 pages. [produced by Google in WDTX Case No. 6:20-cv-00881 on Sep. 10, 2021].

Slim Devices. Squeezebox Hardware. https://web.archive.org/web/20050206021903/http://www.slimdevices.com/pi_specs.html, 3 pages. [produced by Google in WDTX Case No. 6:20-cv-00881 on Sep. 10, 2021].

Slim Devices. Squeezebox2 Hardware. 2002-2005. https://web.archive.org/web/20050713233701/http://www.slimdevices.com/pi_specs.html, 3 pages [produced by Google in WDTX Case No. 6:20-cv-00881 on Sep. 10, 2021].

Slim Devices. Synchronization. 2002-2005, <https://web.archive.org/web/20060113080440/http://wiki.slimdevices.com/index.cgi?Synchronization>, 1 page. [produced by Google in WDTX Case No. 6:20-cv-00881 on Sep. 10, 2021].

Slimserver. YouTube. Nov. 5, 2006, <https://www.youtube.com/watch?v=5-IMSAuUPAc>, 3 pages. [produced by Google in WDTX Case No. 6:20-cv-00881 on Sep. 10, 2021].

Softsqueeze 2. 2004-2005, <https://web.archive.org/web/20050403091101/http://softsqueeze.sourceforge.net sync.html>, 2 pages. [produced by Google in WDTX Case No. 6:20-cv-00881 on Sep. 10, 2021].

Sonos, Inc.v. Google, LLC. Google's Petition for Review of the Initial Determination on Violation of Section 337, filed Sep. 8, 2021, 106 pages.

Sonos, Inc.v. Google, LLC. Google's Response to Sonos's Petition for Review of the Initial Determination on Violation of Section 337, Sep. 7, 2021, 111 pages.

Sonos, Inc.v. Google, LLC. Initial Determination on Violation of Section 337 and Recommended Determination on Remedy and Bond, filed Aug. 13, 2021, 199 pages.

Sonos, Inc.v. Google, LLC. Sonos Inc.'s Petition and Contingent Petition for Review of the Intitial Determination on Violation of Section 337, Aug. 27, 2021, 122 pages.

Sonos, Inc.v. Google, LLC. Sonos Inc.'s Response to Google's Petition for Review of the Initial Determination on Violation of Section 337, Sep. 27, 2021, 117 pages.

Sonos, Inc.v. Google, LLC, WDTX Case No. 6:20-cv-00881, Google's Final Invalidity Contentions; dated Sep. 10, 2021, 90 pages.

Sonos, Inc.v. Google, LLC, WDTX Case No. 6:20-cv-00881, Google's Preliminary Invalidity Contentions dated Mar. 5, 2021, 93 pages.

Sonosv. Google. Respondents' Final Invalidity Claim Charts for U.S. Pat. No. 10,469,966, Exhibits 1-10, dated Sep. 10, 2021, 927 pages.

Sonosv. Google. Respondents' Final Invalidity Claim Charts for U.S. Pat. No. 10,848,885, Exhibits 1-10, dated Sep. 10, 2021, 1279 pages.

Sonosv. Google. Respondents' Final Invalidity Contentions Riders A-H and L for Patents '988 and '885, dated Sep. 10, 2021, 422 pages.

Sonosv. Google. Respondents' Final Invalidity Claim Charts for U.S. Pat. No. 10,469,966, Exhibits 1-9, dated Mar. 5, 2021, 868 pages.

Sonosv. Google. Respondents' Final Invalidity Claim Charts for U.S. Pat. No. 10,848,885, Exhibits 1-9, dated Mar. 5, 2021, 1212 pages.

Sonosv. Google. Respondents' Final Invalidity Contentions for U.S. Pat. No. 9,344,206, Exhibits 1-9, dated Mar. 5, 2021, 496 pages.

Sonosv. Google. Respondents' Final Invalidity Contention Riders A-H for Patents '966 and '885, dated Mar. 5, 2021, 398 pages.

Squeezebox 2. Owner's Guide, <http://svn.slimdevices.com/repos/slim/7.4/trunk/docs/squeezebox2/Squeezebox2-Owners-Guide.pdf>, 28 pages. [produced by Google in WDTX Case No. 6:20-cv-00881 on Sep. 10, 2021].

Google LLCv. Sonos, Inc., Northern District of California Case No. 3:20-cv-06754, Google's Invalidity Contentions; dated Dec. 6, 2021, 94 pages.

Googlev. Sonos. Plaintiffs' Invalidity Claim Charts for U.S. Pat. No. 10,469,966, Exhibits 1-10, dated Dec. 6, 2021, 839 pages.

Googlev. Sonos. Plaintiffs' Invalidity Claim Charts for U.S. Pat. No. 10,848,885, Exhibits 1-10, dated Dec. 6, 2021, 987 pages.

Googlev. Sonos. Plaintiffs' Invalidity Claim Charts for U.S. Pat. No. 9,344,206, Exhibits 1-9, dated Dec. 6, 2021, 496 pages.

Googlev. Sonos. Plaintiffs' Invalidity Contention Rides A-H and L for Patents '966 and '885, dated Dec. 6, 2021, 421 pages.

Googlev. Sonos, Inc. Sonos's Second Supplemental Responses and Objections to Google's First Set of Interrogatories and Attachment A, Case No. 3:20-cv-06754, Feb. 4, 2022, 590 pages.

Google LLCv. Sonos Inc., Google LLC's Responsive Claim Construction Brief, Northern District of California Case No. 3:20-cv-06754, dated Apr. 4, 2022, 29 pages.

US 11,388,532 B2

Page 31

(56)

References Cited

OTHER PUBLICATIONS

Google LLC v. Sonos Inc., Sonos, Inc.'s Opening Claims Construction Brief, Northern District of California Case No. 3:20-cv-06754, dated Mar. 21, 2022, 29 pages.

Google LLC v. Sonos Inc., Sonos, Inc.'s Reply Claim Construction Brief, Northern District of California Case No. 3:20-cv-06754, dated Apr. 11, 2022, 20 pages.

Google LLC v. Sonos Inc., Sonos, Inc.'s Third Supplemental Responses and Objections to Google's First Set of Interrogatories [1-20], Northern District of California Case No. 3:20-cv-06754, dated Mar. 21, 2022, 340 pages.

Google LLC v. Sonos Inc., Sonos, Inc.'s Opposition to Google's Motion for Summary Judgment Pursuant to the Court's Patent Showdown Procedure. Northern District of California Case No. 3:20-cv-06754-WHA, May 5, 2022, 30 pages.

Google LLC v. Sonos Inc., Sonos's Reply in Support of Its Motion for Summary Judgment of Infringement of '885 Patent Claim 1. Northern District of California Case No. 3:20-cv-06754-WHA, May 5, 2022, 30 pages.

Sonos, Inc. v. Google LLC. Google's Motion for Summary Judgment Pursuant to the Court's Patent Showdown Procedure. Exhibit 18: Yamaha DME Designer 4.0 Owner's Manual; Copyright 2004, Northern District of California Case No. 3:20-cv-06754-WHA, Apr. 14, 2022, 7 pages.

Sonos, Inc. v. Google LLC. Google's Motion for Summary Judgment Pursuant to the Court's Patent Showdown Procedure. Northern District of California Case No. 3:20-cv-06754-WHA, Apr. 14, 2022, 33 pages.

Sonos, Inc. v. Google LLC. Google's Motion for Summary Judgment Pursuant to the Court's Patent Showdown Procedure. Northern District of California Case No. 3:20-cv-06754-WHA, May 5, 2022, 33 pages.

Sonos, Inc. v. Google LLC. Google's Motion for Summary Judgment Pursuant to the Court's Patent Showdown Procedure. Exhibit 1: Declaration of Samrat Bhattacharjee. Northern District of California Case No. 3:20-cv-06754-WHA, May 19, 2022, 5 pages.

Sonos, Inc. v. Google LLC. Google's Motion for Summary Judgment Pursuant to the Court's Patent Showdown Procedure. Northern District of California Case No. 3:20-cv-06754-WHA, May 19, 2022, 24 pages.

* cited by examiner

U.S. Patent

Jul. 12, 2022

Sheet 1 of 13

US 11,388,532 B2

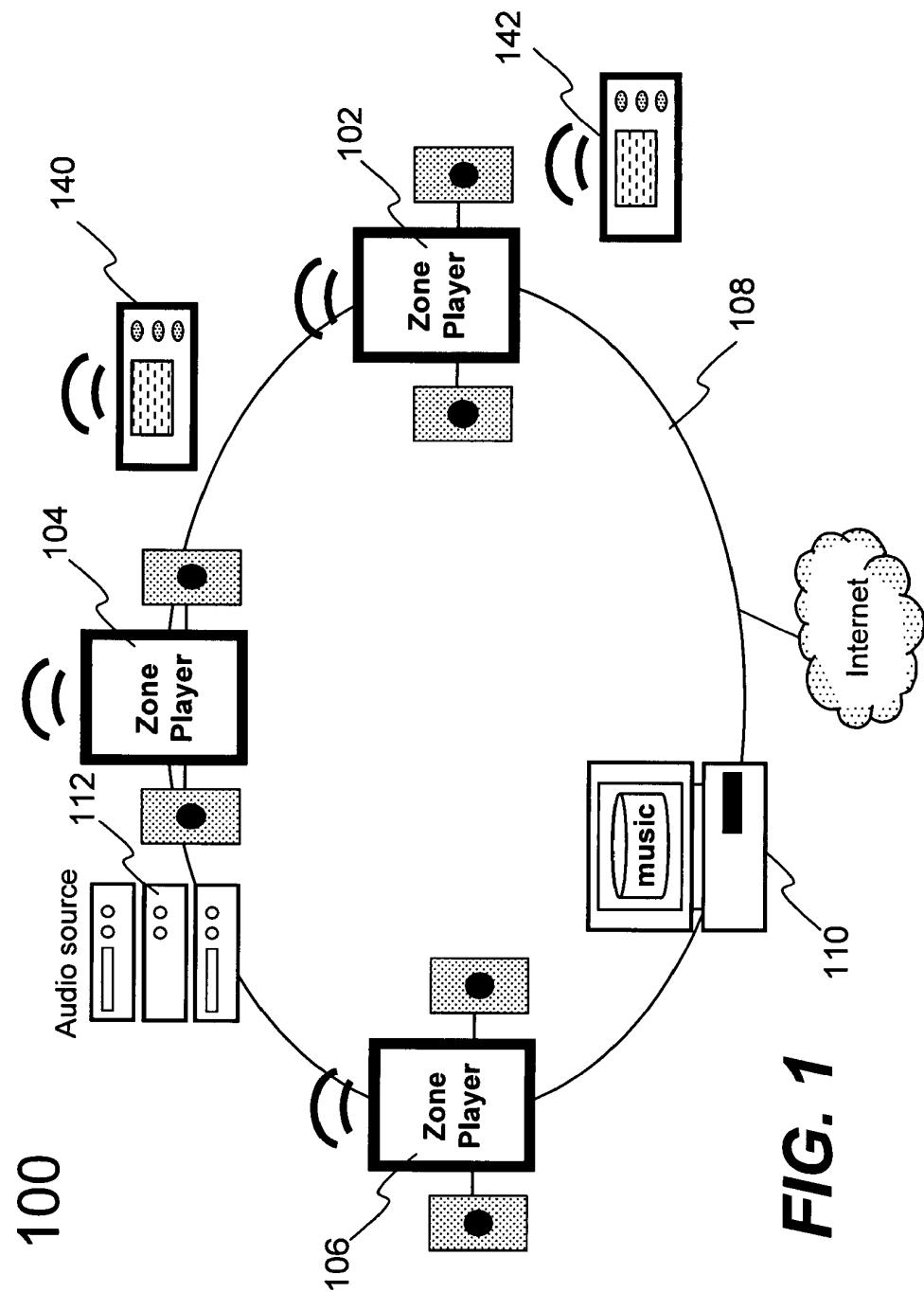


FIG. 1

U.S. Patent

Jul. 12, 2022

Sheet 2 of 13

US 11,388,532 B2

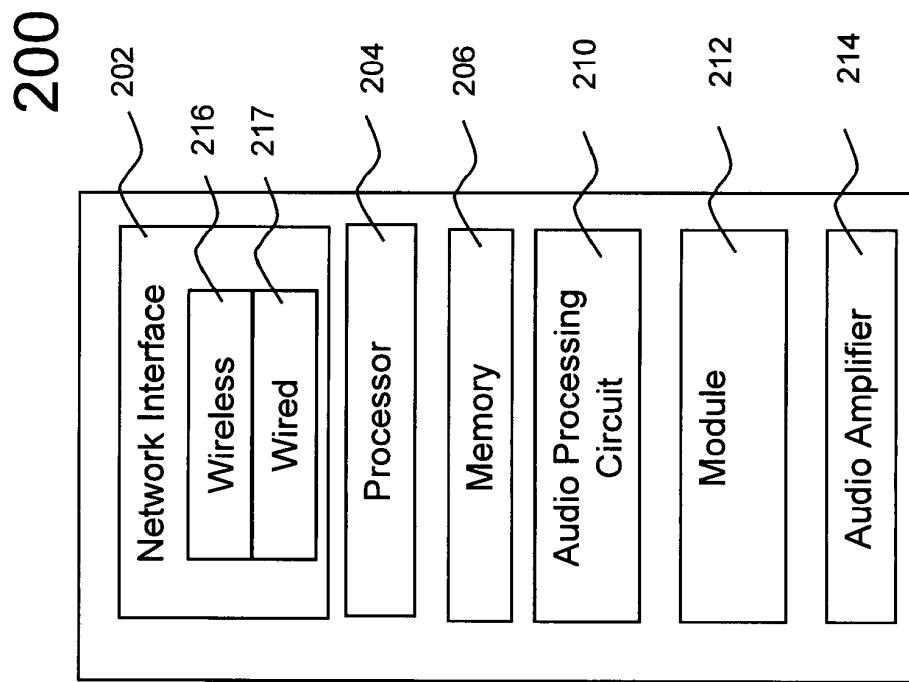


FIG. 2A

U.S. Patent

Jul. 12, 2022

Sheet 3 of 13

US 11,388,532 B2

240

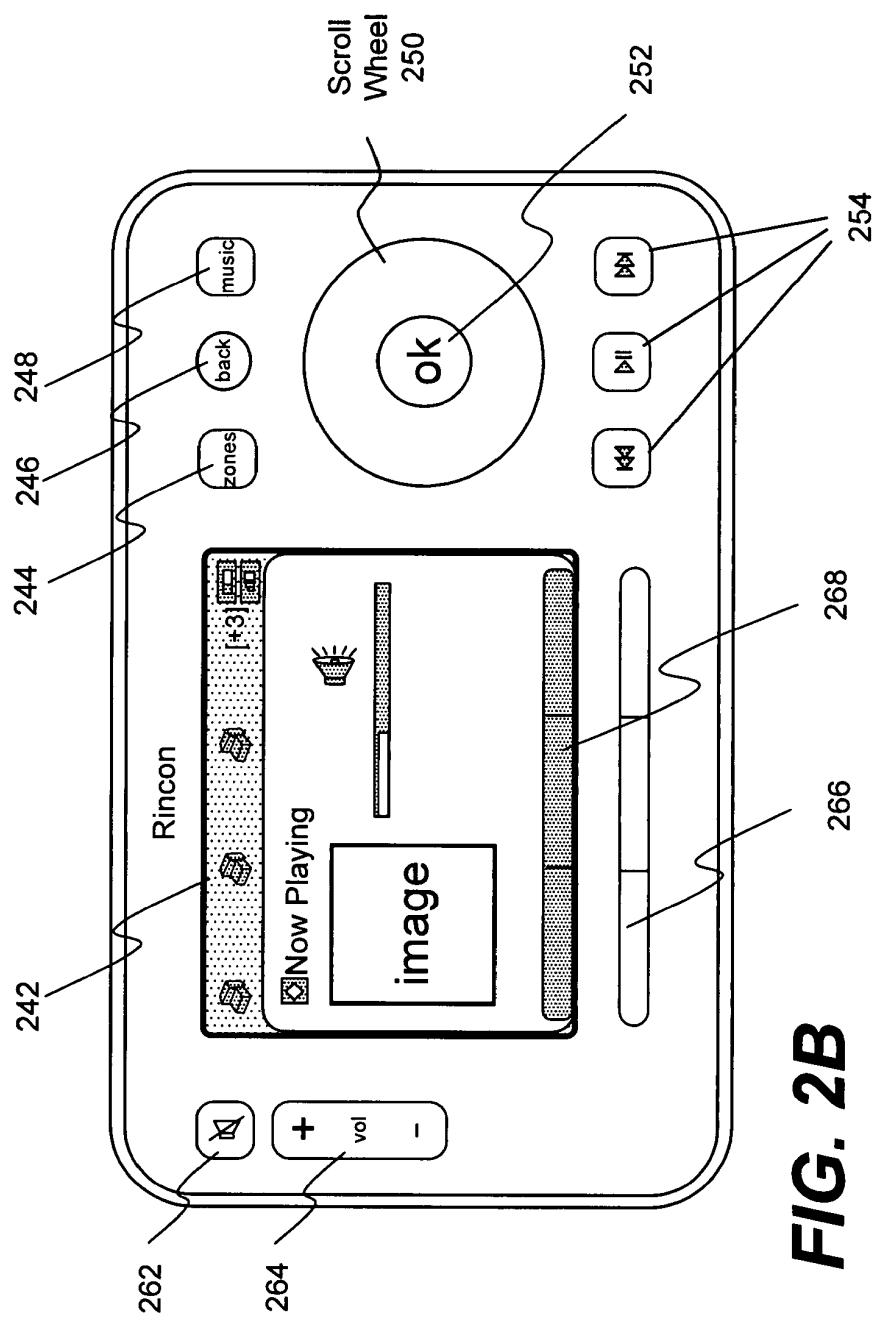


FIG. 2B

U.S. Patent

Jul. 12, 2022

Sheet 4 of 13

US 11,388,532 B2

270

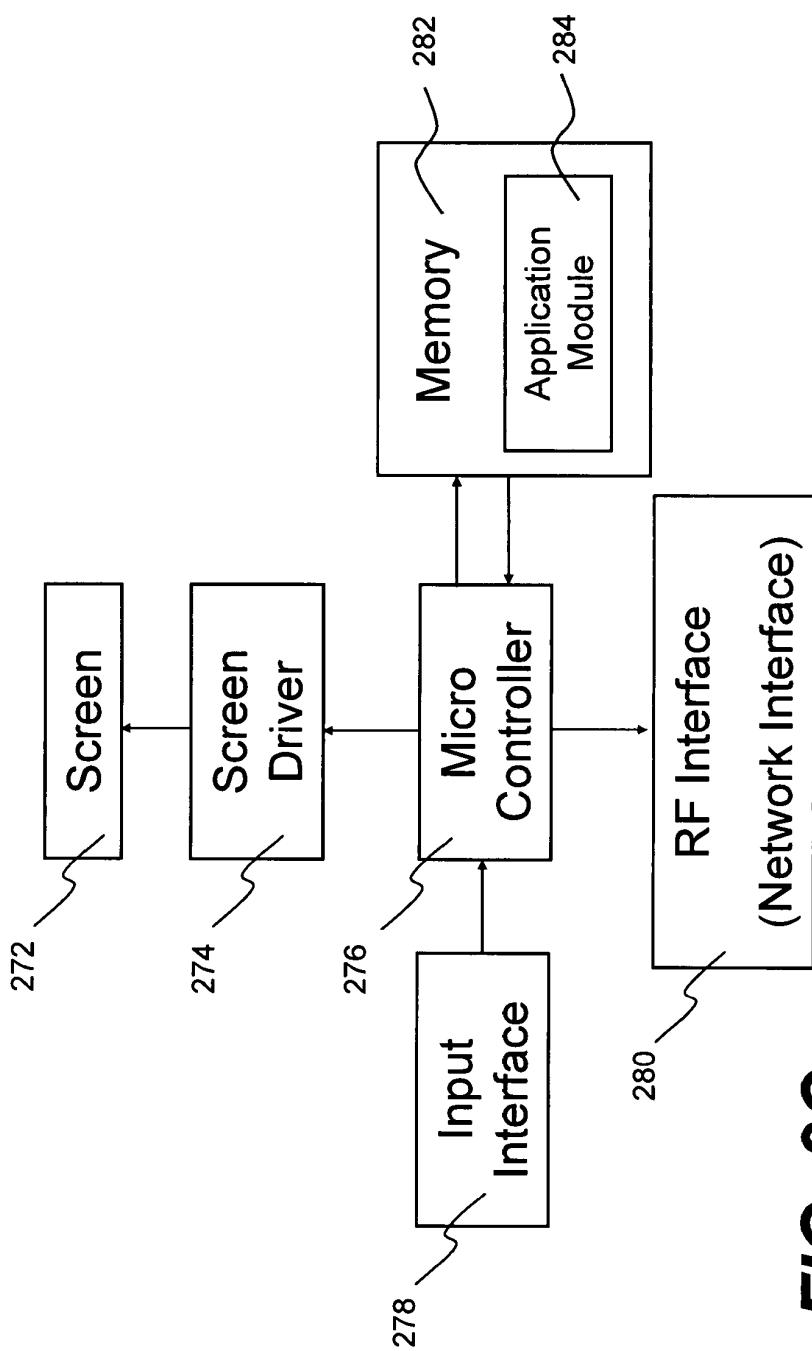


FIG. 2C

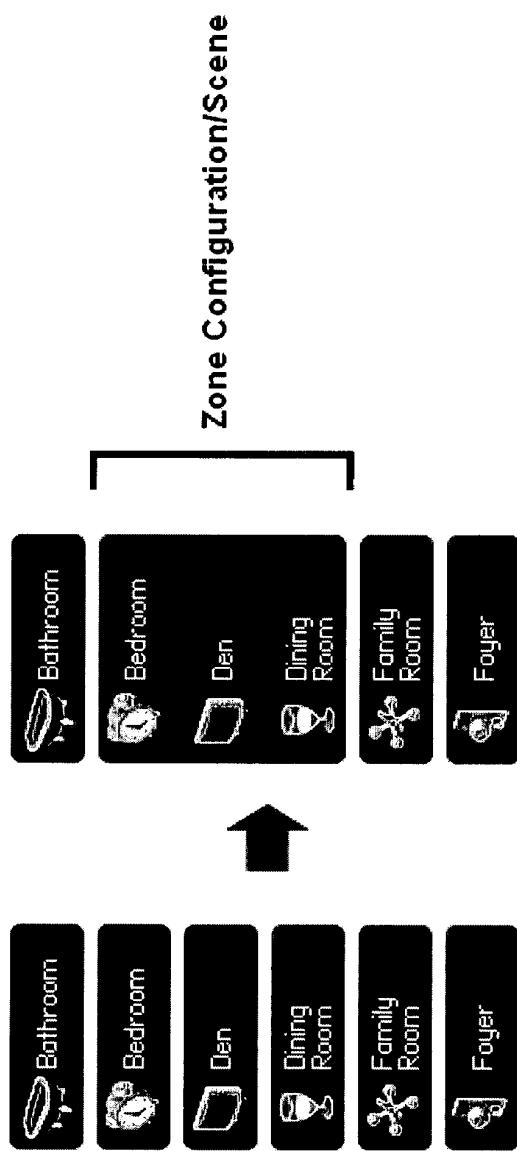
U.S. Patent

Jul. 12, 2022

Sheet 5 of 13

US 11,388,532 B2

FIG. 3A



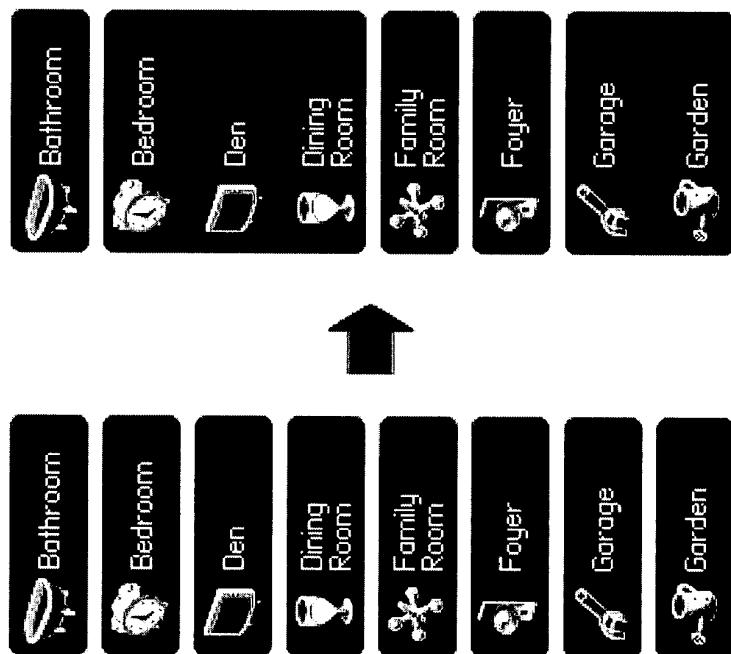
U.S. Patent

Jul. 12, 2022

Sheet 6 of 13

US 11,388,532 B2

FIG. 3B



U.S. Patent

Jul. 12, 2022

Sheet 7 of 13

US 11,388,532 B2

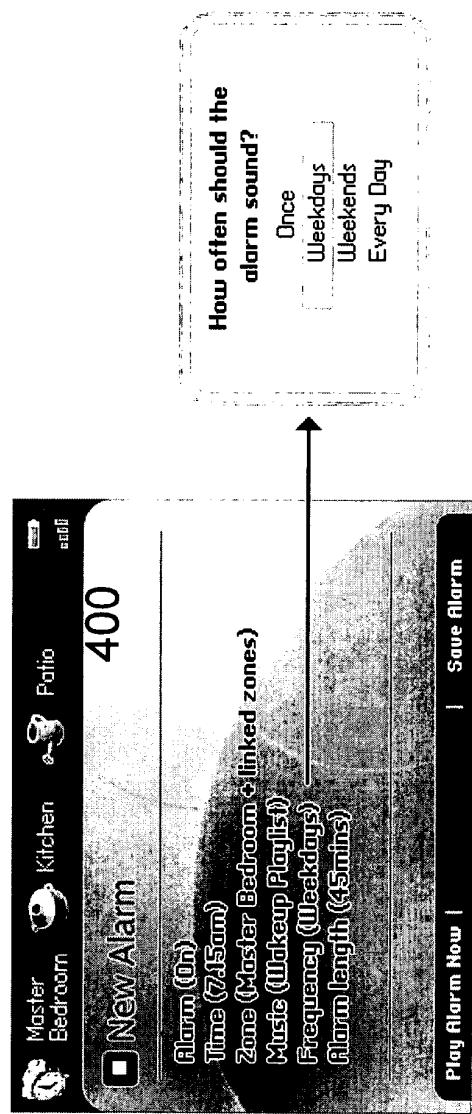


FIG. 4

U.S. Patent

Jul. 12, 2022

Sheet 8 of 13

US 11,388,532 B2

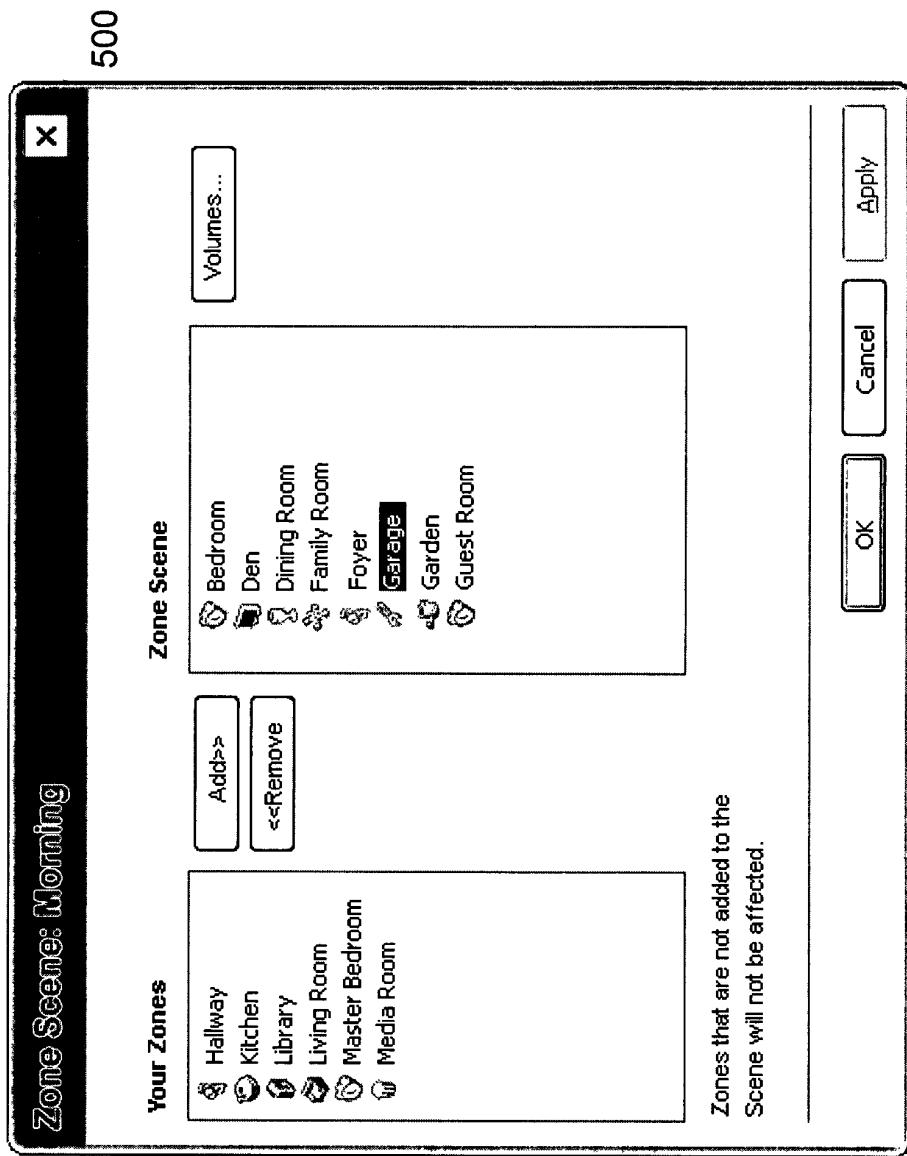


FIG. 5A

U.S. Patent

Jul. 12, 2022

Sheet 9 of 13

US 11,388,532 B2

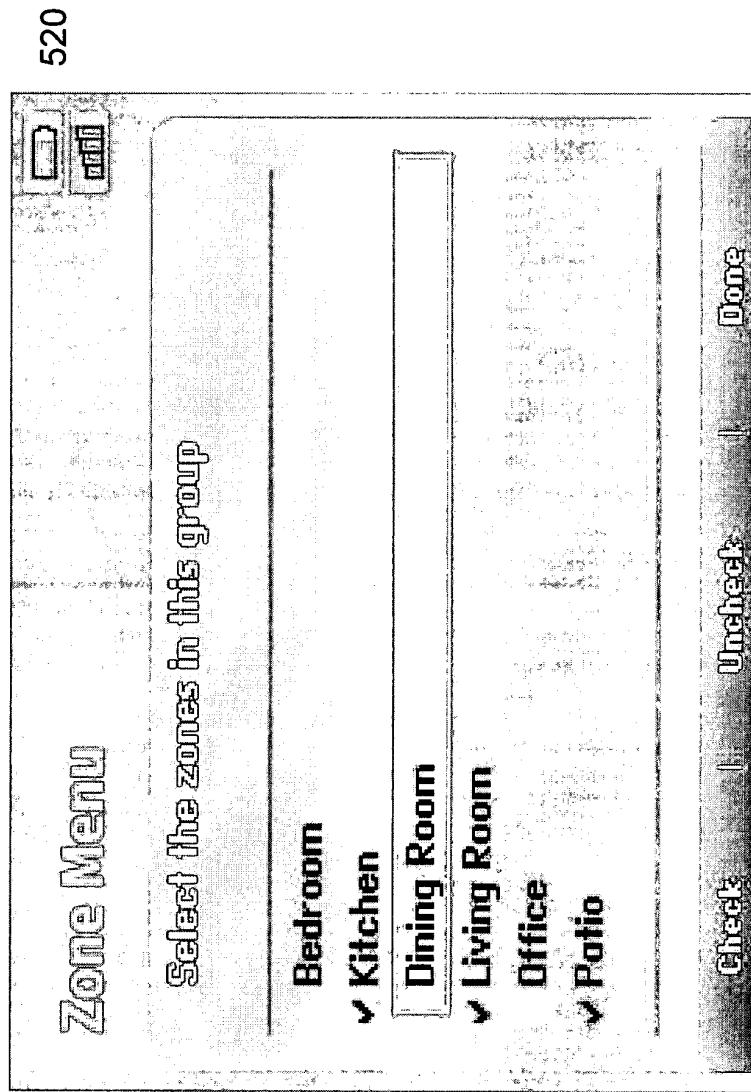


FIG. 5B

U.S. Patent

Jul. 12, 2022

Sheet 10 of 13

US 11,388,532 B2

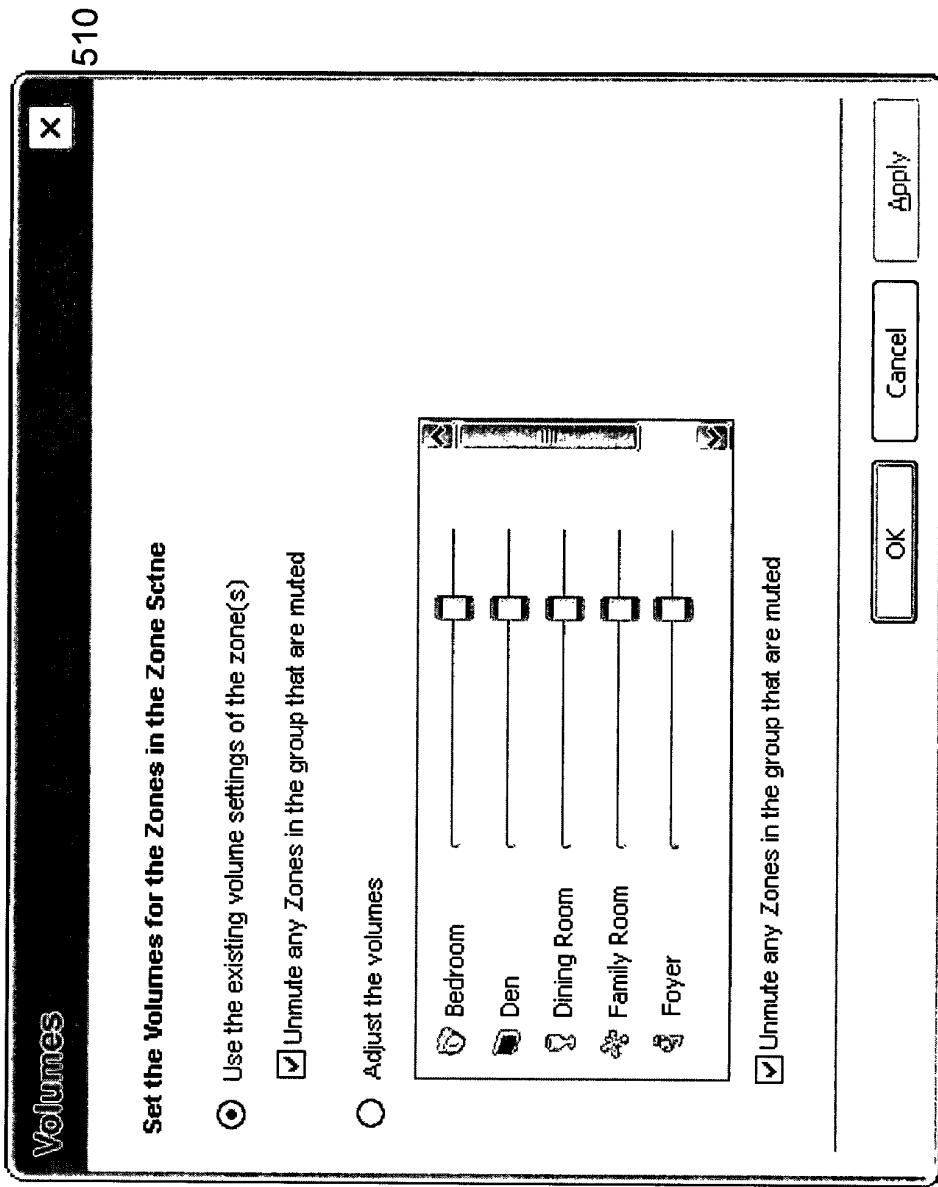


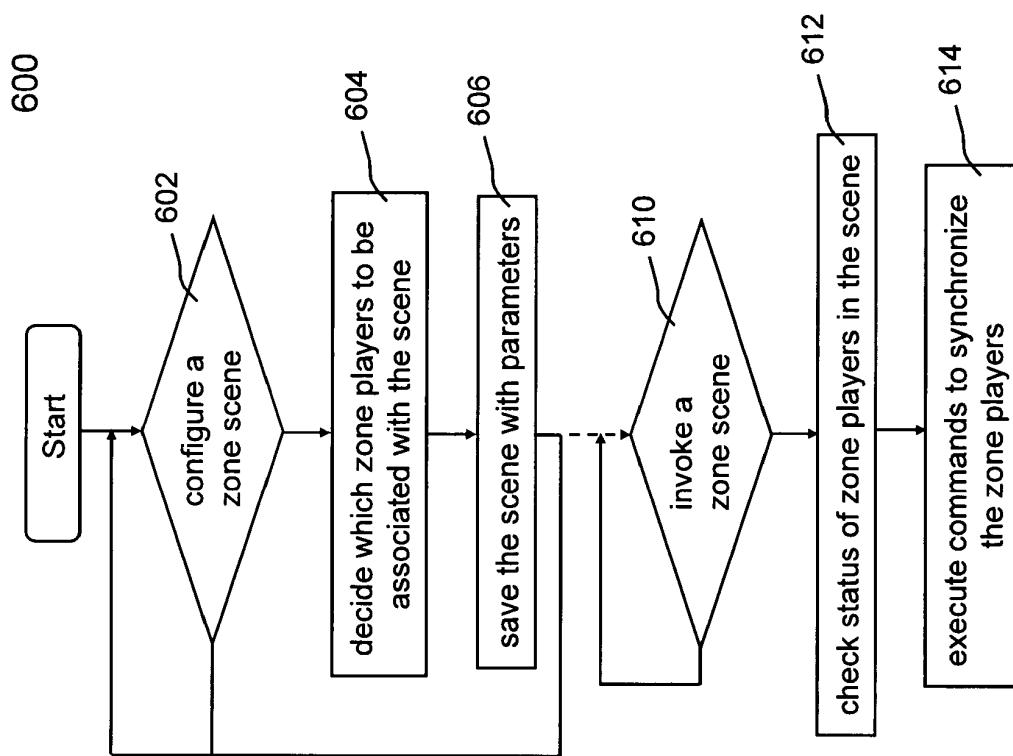
FIG. 5C

U.S. Patent

Jul. 12, 2022

Sheet 11 of 13

US 11,388,532 B2

FIG. 6

U.S. Patent

Jul. 12, 2022

Sheet 12 of 13

US 11,388,532 B2

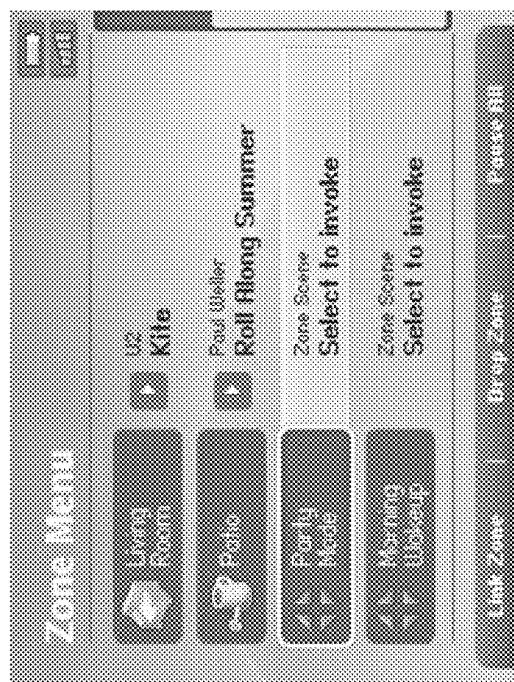


FIG. 7

U.S. Patent

Jul. 12, 2022

Sheet 13 of 13

US 11,388,532 B2

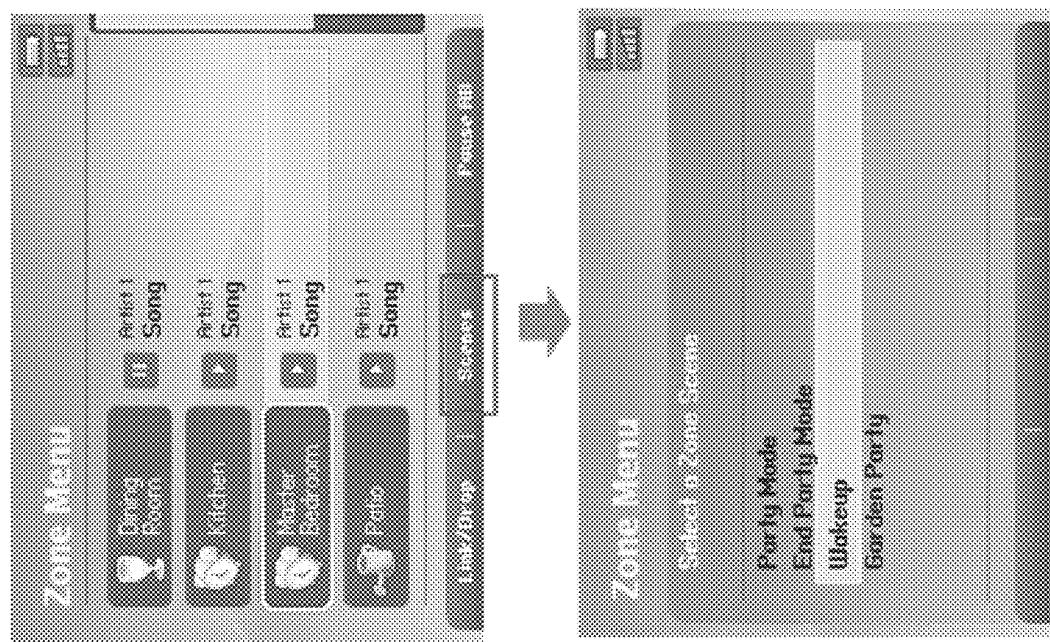


FIG. 8

US 11,388,532 B2

1**ZONE SCENE ACTIVATION****CROSS REFERENCE TO RELATED APPLICATIONS**

This application is a continuation of and claims priority to U.S. patent application Ser. No. 14/465,457, filed on Aug. 21, 2014, entitled "METHOD AND APPARATUS FOR UPDATING ZONE CONFIGURATIONS IN A MULTI-ZONE SYSTEM," which is a continuation of U.S. patent application Ser. No. 13/896,829, filed on May 17, 2013, entitled "METHOD AND APPARATUS FOR UPDATING ZONE CONFIGURATIONS IN A MULTI-ZONE SYSTEM," which is a continuation of U.S. patent application Ser. No. 11/853,790, filed Sep. 11, 2007, entitled "CONTROLLING AND MANIPULATING GROUPINGS IN A MULTI-ZONE MEDIA SYSTEM," which claims priority to U.S. Provisional Application No. 60/825,407 filed on Sep. 12, 2006, entitled "CONTROLLING AND MANIPULATING GROUPINGS IN A MULTI-ZONE MEDIA SYSTEM," each of which is hereby incorporated by reference in its entirety for all purposes.

BACKGROUND OF THE INVENTION**Field of the Invention**

The invention is generally related to the area of consumer electronics and human-computer interaction. In particular, the invention is related to method and apparatus for controlling or manipulating a plurality of multimedia players in a multi-zone system.

An enduring passion for quality audio reproduction or system is continuing to drive demands from users. One of the demands includes an audio system in a house in which, for example, one could grill to classic rock on a patio while another one may cook up his/her own music selections in a kitchen. This is all at the same time while a teenager catches a ballgame in a family room, and another one blasts pop in a bedroom. And the best part of such audio system is that each family member does not need his or her own stereo system—one system gives everyone access to all the music sources.

Currently, one of the systems that can meet part of such demand is a conventional multi-zone audio system that usually includes a number of audio players. Each of the audio players has its own amplifier(s) and a set of speakers and typically installed in one place (e.g., a room). In order to play an audio source at one location, the audio source must be provided locally or from a centralized location. When the audio source is provided locally, the multi-zone audio system functions as a collection of many stereo systems, making source sharing difficult. When the audio source is provided centrally, the centralized location may include a juke box, many compact discs, an AM or FM radio, tapes, or others. To send an audio source to an audio player demanding such source, a cross-bar type of device is used to prevent the audio source from going to other audio players that may be playing other audio sources.

In order to achieve playing different audio sources in different audio players, the traditional multi-zone audio system is generally either hard-wired or controlled by a pre-configured and pre-programmed controller. While the pre-programmed configuration may be satisfactory in one situation, it may not be suitable for another situation. For example, a person would like to listen to broadcast news from his/her favorite radio station in a bedroom, a bathroom

2

and a den while preparing to go to work in the morning. The same person may wish to listen in the den and the living room to music from a compact disc in the evening. In order to satisfy such requirements, two groups of audio players must be established. In the morning, the audio players in the bedroom, the bathroom and the den need to be grouped for the broadcast news. In the evening, the audio players in the den and the living room are grouped for the music. Over the weekend, the audio players in the den, the living room, and a kitchen are grouped for party music. Because the morning group, the evening group and the weekend group contain the den, it can be difficult for the traditional system to accommodate the requirement of dynamically managing the ad hoc creation and deletion of groups.

There is a need for dynamic control of the audio players as a group. With a minimum manipulation, the audio players may be readily grouped. In a traditional multi-zone audio system, the audio players have to be adjusted one at a time, resulting in an inconvenient and non-homogenous audio environment. Further, there is a need to individually or systematically adjust the audio volume of the audio players.

SUMMARY OF THE INVENTION

This section is for the purpose of summarizing some aspects of the present invention and to briefly introduce some preferred embodiments. Simplifications or omissions in this section as well as in the abstract or the title of this description may be made to avoid obscuring the purpose of this section, the abstract and the title. Such simplifications or omissions are not intended to limit the scope of the present invention.

In general, the present invention pertains to controlling a plurality of multimedia players, or simply players, in groups. According to one aspect of the present invention, a mechanism is provided to allow a user to group some of the players according to a theme or scene, where each of the players is located in a zone. When the scene is activated, the players in the scene react in a synchronized manner. For example, the players in the scene are all caused to play an audio source or music in a playlist, wherein the audio source may be located anywhere on a network.

According to another aspect of the present invention, the scene may be activated at any time or a specific time. A user may activate the scene at any time so that only some selected zones in an entertainment system facilitate a playback of an audio source. When the scene is activated at a specific time, the scene may be used as an alarm or buzzer.

According to still another aspect of the present invention, a controlling device (also referred to herein as controller) is provided to facilitate a user to select any of the players in the system to form respective groups each of which is set up per a scene. Although various scenes may be saved in any of the members in a group, commands are preferably sent from the controller to the rest of the members when one of the scenes is executed. Depending on implementation, the commands include parameters pertaining to identifiers of the players, volumes settings, audio source and etc.

According to yet another aspect of the present invention, a configurable module is implemented in the controlling device that provides interactive graphic user interface for forming, managing and controlling groups in the system, de-grouping a group or adjusting audio volume of individual players or a group of players.

The present invention may be implemented in many forms including software, hardware or a combination of both. According to one embodiment, the present invention is

US 11,388,532 B2

3

directed to a method for groupings in a multi-zone media system, the method comprises providing a mechanism to allow a user to determine which players in the system to be associated with a theme representing a group; and configuring the theme with parameters pertaining to the players, wherein the theme is activated at anytime or a specific time so that the players react in a synchronized manner. The players in a scene are synchronized to play a multimedia file when the scene is activated.

According to another embodiment, the present invention is directed to an entertainment system for grouping players, the system comprises: a plurality of players, each located in one zone; and a controller providing a mechanism to allow a user to select which of the players to be associated with a theme representing a group; and configure the theme with parameters pertaining to the selected players, wherein the theme is activated at anytime or a specific time so that the selected players react in a synchronized manner. As a result, the selected players are synchronized to play a multimedia that is in a digital format and retrieved from a source over a network.

One of the objects, features, and advantages of the present invention is to remotely control a plurality of multimedia players in a multi-zone system, playing and controlling the audio source synchronously if the players are grouped together, or playing and controlling the audio source individually if the players are disassociated with each other.

Other objects, features, and advantages of the present invention will become apparent upon examining the following detailed description of an embodiment thereof, taken in conjunction with the attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other features, aspects, and advantages of the present invention will become better understood with regard to the following description, appended claims, and accompanying drawings where:

FIG. 1 shows an exemplary configuration in which the present invention may be practiced;

FIG. 2A shows an exemplary functional block diagram of a player in accordance with the present invention;

FIG. 2B shows an example of a controller that may be used to remotely control one of more players of FIG. 2A;

FIG. 2C shows an exemplary internal functional block diagram of a controller in accordance with one embodiment of the present invention;

FIG. 3A provides an illustration of one zone scene, where the left column shows the starting zone grouping—all zones are separate, the column on the right shows the effects of grouping the zones to make a group of 3 zones named after “Morning”;

FIG. 3B shows that a user defines multiple groups to be gathered at the same time;

FIG. 4 shows an exemplary user interface that may be displayed on a controller or a computer of FIG. 1;

FIG. 5A shows a user interface to allow a user to form a scene;

FIG. 5B shows another user interface 520 to allow a user to form a scene;

FIG. 5C shows a user interface to allow a user to adjust a volume level of the zone players in a zone scene individually or collectively;

FIG. 6 shows a flowchart or process of providing a player theme or a zone scene for a plurality of players, where one or more of the players are placed in a zone; and

4

FIG. 7 shows an example user interface for invoking a zone scene; and

FIG. 8 shows another example user interface for invoking a zone scene.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The detailed description of the invention is presented largely in terms of procedures in terms of procedures, steps, logic blocks, processing, and other symbolic representations that directly or indirectly resemble the operations of data processing devices coupled to networks. These process descriptions and representations are typically used by those skilled in the art to most effectively convey the substance of their work to others skilled in the art. Numerous specific details are set forth in order to provide a thorough understanding of the present invention. However, it will become obvious to those skilled in the art that the present invention may be practiced without these specific details. In other instances, well known methods, procedures, components, and circuitry have not been described in detail to avoid unnecessarily obscuring aspects of the present invention.

Reference herein to “one embodiment” or “an embodiment” means that a particular feature, structure, or characteristic described in connection with the embodiment can be included in at least one embodiment of the invention. The appearances of the phrase “in one embodiment” in various places in the specification are not necessarily all referring to the same embodiment, nor are separate or alternative embodiments mutually exclusive of other embodiments. Further, the order of blocks in process flowcharts or diagrams representing one or more embodiments of the invention do not inherently indicate any particular order nor imply any limitations in the invention.

Referring now to the drawings, in which like numerals refer to like parts throughout the several views. FIG. 1 shows an exemplary configuration 100 in which the present invention may be practiced. The configuration may represent, but not be limited to, a part of a residential home, a business building or a complex with multiple zones. There are a number of multimedia players of which three examples 102, 104 and 106 are shown as audio devices. Each of the audio devices may be installed or provided in one particular area or zone and hence referred to as a zone player herein.

As used herein, unless explicitly stated otherwise, an audio source or audio sources are in digital format and can be transported or streamed over a data network. To facilitate the understanding of the present invention, it is assumed that the configuration 100 represents a home. Thus, the zone player 102 and 104 may be located in two of the bedrooms respectively while the zone player 106 may be installed in a living room. All of the zone players 102, 104 and 106 are coupled directly or indirectly to a data network 108. In addition, a computing device 110 is shown to be coupled on the network 108. In reality, any other devices such as a home gateway device, a storage device, or an MP3 player may be coupled to the network 108 as well.

The network 108 may be a wired network, a wireless network or a combination of both. In one example, all devices including the zone players 102, 104 and 106 are coupled to the network 108 by wireless means based on an industry standard such as IEEE 802.11. In yet another example, all devices including the zone players 102, 104 and 106 are part of a local area network that communicates with a wide area network (e.g., the Internet).

US 11,388,532 B2

5

Many devices on the network 108 are configured to download and store audio sources. For example, the computing device 110 can download audio sources from the Internet and store the downloaded sources locally for sharing with other devices on the Internet or the network 108. The computing device 110 or any of the zone players can also be configured to receive streaming audio. Shown as a stereo system, the device 112 is configured to receive an analog audio source (e.g., from broadcasting) or retrieve a digital audio source (e.g., from a compact disk). The analog audio sources can be converted to digital audio sources. In accordance with the present invention, the audio source may be shared among the devices on the network 108.

Two or more zone players may be grouped together to form a new zone group. Any combinations of zone players and an existing zone group may be grouped together. In one instance, a new zone group is formed by adding one zone player to another zone player or an existing zone group.

Referring now to FIG. 2A, there is shown an exemplary functional block diagram of a zone player 200 in accordance with the present invention. The zone player 200 includes a network interface 202, a processor 204, a memory 206, an audio processing circuit 210, a module 212, and optionally, an audio amplifier 214 that may be internal or external. The network interface 202 facilitates a data flow between a data network (i.e., the data network 108 of FIG. 1) and the zone player 200 and typically executes a special set of rules (i.e., a protocol) to send data back and forth. One of the common protocols used in the Internet is TCP/IP (Transmission Control Protocol/Internet Protocol). In general, a network interface manages the assembling of an audio source or file into smaller packets that are transmitted over the data network or reassembles received packets into the original source or file. In addition, the network interface 202 handles the address part of each packet so that it gets to the right destination or intercepts packets destined for the zone player 200.

The network interface 202 may include one or both of a wireless interface 216 and a wired interface 217. The wireless interface 216, also referred to as a RF interface, provides network interface functions by a wireless means for the zone player 200 to communicate with other devices in accordance with a communication protocol (such as the wireless standard IEEE 802.11a, 802.11b or 802.11g). The wired interface 217 provides network interface functions by a wired means (e.g., an Ethernet cable). In one embodiment, a zone player includes both of the interfaces 216 and 217, and other zone players include only a RF or wired interface. Thus these other zone players communicate with other devices on a network or retrieve audio sources via the zone player. The processor 204 is configured to control the operation of other parts in the zone player 200. The memory 206 may be loaded with one or more software modules that can be executed by the processor 204 to achieve desired tasks. According to one aspect of the present invention, a software module implementing one embodiment of the present invention is executed, the processor 204 operates in accordance with the software module in reference to a saved zone group configuration characterizing a zone group created by a user, the zone player 200 is caused to retrieve an audio source from another zone player or a device on the network.

According to one embodiment of the present invention, the memory 206 is used to save one or more saved zone configuration files that may be retrieved for modification at any time. Typically, a saved zone group configuration file is transmitted to a controller (e.g., the controlling device 140

6

or 142 of FIG. 1, a computer, a portable device, or a TV) when a user operates the controlling device. The zone group configuration provides an interactive user interface so that various manipulations or control of the zone players may be performed.

The audio processing circuit 210 resembles most of the circuitry in an audio playback device and includes one or more digital-to-analog converters (DAC), an audio preprocessing part, an audio enhancement part or a digital signal processor and others. In operation, when an audio source is retrieved via the network interface 202, the audio source is processed in the audio processing circuit 210 to produce analog audio signals. The processed analog audio signals are then provided to the audio amplifier 214 for playback on speakers. In addition, the audio processing circuit 210 may include necessary circuitry to process analog signals as inputs to produce digital signals for sharing with other devices on a network.

Depending on an exact implementation, the module 212 may be implemented as a combination of hardware and software. In one embodiment, the module 212 is used to save a scene. The audio amplifier 214 is typically an analog circuit that powers the provided analog audio signals to drive one or more speakers.

Referring now to FIG. 2B, there is shown an exemplary controller 240, which may correspond to the controlling device 140 or 142 of FIG. 1. The controller 240 may be used to facilitate the control of multi-media applications, automation and others in a complex. In particular, the controller 240 is configured to facilitate a selection of a plurality of audio sources available on the network, controlling operations of one or more zone players (e.g., the zone player 200) through a RF interface corresponding to the RF interface 216 of FIG. 2A. According to one embodiment, the wireless means is based on an industry standard (e.g., infrared, radio, wireless standard IEEE 802.11a, 802.11b or 802.11g). When a particular audio source is being played in the zone player 200, a picture, if there is any, associated with the audio source may be transmitted from the zone player 200 to the controller 240 for display. In one embodiment, the controller 240 is used to synchronize more than one zone players by grouping the zone players in a group. In another embodiment, the controller 240 is used to control the volume of each of the zone players in a zone group individually or together.

The user interface for the controller 240 includes a screen 242 (e.g., a LCD screen) and a set of functional buttons as follows: a “zones” button 244, a “back” button 246, a “music” button 248, a scroll wheel 250, “ok” button 252, a set of transport control buttons 254, a mute button 262, a volume up/down button 264, a set of soft buttons 266 corresponding to the labels 268 displayed on the screen 242.

The screen 242 displays various screen menus in response to a user's selection. In one embodiment, the “zones” button 244 activates a zone management screen or “Zone Menu”, which is described in more details below. The “back” button 246 may lead to different actions depending on the current screen. In one embodiment, the “back” button triggers the current screen display to go back to a previous one. In another embodiment, the “back” button negates the user's erroneous selection. The “music” button 248 activates a music menu, which allows the selection of an audio source (e.g., a song) to be added to a zone player's music queue for playback.

The scroll wheel 250 is used for selecting an item within a list, whenever a list is presented on the screen 242. When the items in the list are too many to be accommodated in one

US 11,388,532 B2

7

screen display, a scroll indicator such as a scroll bar or a scroll arrow is displayed beside the list. When the scroll indicator is displayed, a user may rotate the scroll wheel 250 to either choose a displayed item or display a hidden item in the list. The “ok” button 252 is used to confirm the user selection on the screen 242.

There are three transport buttons 254, which are used to control the effect of the currently playing song. For example, the functions of the transport buttons may include play/pause and forward/rewind a song, move forward to a next song track, or move backward to a previous track. According to one embodiment, pressing one of the volume control buttons such as the mute button 262 or the volume up/down button 264 activates a volume panel. In addition, there are three soft buttons 266 that can be activated in accordance with the labels 268 on the screen 242. It can be understood that, in a multi-zone system, there may be multiple audio sources being played respectively in more than one zone players. The music transport functions described herein shall apply selectively to one of the sources when a corresponding one of the zone players or zone groups is selected.

FIG. 2C illustrates an internal functional block diagram of an exemplary controller 270, which may correspond to the controller 240 of FIG. 2B. The screen 272 on the controller 270 may be a LCD screen. The screen 272 communicates with and is commanded by a screen driver 274 that is controlled by a microcontroller (e.g., a processor) 276. The memory 282 may be loaded with one or more application modules 284 that can be executed by the microcontroller 276 with or without a user input via the user interface 278 to achieve desired tasks. In one embodiment, an application module is configured to facilitate grouping a number of selected zone players into a zone group and synchronizing the zone players for one audio source. In another embodiment, an application module is configured to control together the audio volumes of the zone players in a zone group. In operation, when the microcontroller 276 executes one of the application modules 284, the screen driver 274 generates control signals to drive the screen 272 to display an application specific user interface accordingly, more of which will be described below.

The controller 270 includes a network interface 280 referred to as a RF interface 280 that facilitates wireless communication with a zone player via a corresponding RF interface thereof. In one embodiment, the commands such as volume control and audio playback synchronization are sent via the RF interfaces. In another embodiment, a saved zone group configuration is transmitted between a zone player and a controller via the RF interfaces. The controller 270 may control one or more zone players, such as 102, 104 and 106 of FIG. 1. Nevertheless, there may be more than one controllers, each preferably in a zone (e.g., a room) and configured to control any one and all of the zone players.

In one embodiment, a user creates a zone group including at least two zone players from the controller 240 that sends signals or data to one of the zone players. As all the zone players are coupled on a network, the received signals in one zone player can cause other zone players in the group to be synchronized so that all the zone players in the group playback an identical audio source or a list of identical audio sources in a timely synchronized manner. Similarly, when a user increases the audio volume of the group from the controller, the signals or data of increasing the audio volume for the group are sent to one of the zone players and causes other zone players in the group to be increased together in volume and in scale.

8

According to one implementation, an application module is loaded in memory 282 for zone group management. When a predetermined key (e.g. the “zones” button 244) is activated on the controller 240, the application module is 5 executed in the microcontroller 276. The input interface 278 coupled to and controlled by the microcontroller 276 receives inputs from a user. A “Zone Menu” is then displayed on the screen 272. The user may start grouping zone 10 players into a zone group by activating a “Link Zones” or “Add Zone” soft button, or de-grouping a zone group by activating an “Unlink Zones” or “Drop Zone” button. The detail of the zone group manipulation will be further discussed below.

As described above, the input interface 278 includes a number of function buttons as well as a screen graphical user interface. It should be pointed out that the controller 240 in FIG. 2B is not the only controlling device that may practice the present invention. Other devices that provide the equivalent control functions (e.g., a computing device, a hand-held device) may also be configured to practice the present invention. In the above description, unless otherwise specifically described, it is clear that keys or buttons are generally referred to as either the physical buttons or soft buttons, enabling a user to enter a command or data.

One mechanism for ‘joining’ zone players together for music playback is to link a number of zone players together to form a group. To link a number of zone players together, a user may manually link each zone player or room one after the other. For example, there is a multi-zone system that includes the following zones.

Bathroom
Bedroom
Den
Dining Room
Family Room
Foyer

If the user wishes to link 5 of the 6 zone players using the current mechanism, he/she must start with a single zone and then manually link each zone to that zone. This mechanism may be sometimes quite time consuming. According to one embodiment, a set of zones can be dynamically linked together using one command. Using what is referred to herein as a theme or a zone scene, zones can be configured in a particular scene (e.g., morning, afternoon, or garden), where a predefined zone grouping and setting of attributes for the grouping are automatically effectuated.

For instance, a “Morning” zone scene/configuration command would link the Bedroom, Den and Dining Room together in one action. Without this single command, the user would need to manually and individually link each zone. FIG. 3A provides an illustration of one zone scene, where the left column shows the starting zone grouping—all 55 zones are separate, the column on the right shows the effects of grouping the zones to make a group of 3 zones named after “Morning”.

Expanding this idea further, a Zone Scene can be set to create multiple sets of linked zones. For example, a scene 60 creates 3 separate groups of zones, the downstairs zones would be linked together, the upstairs zones would be linked together in their own group, and the outside zones (in this case the patio) would move into a group of its own.

In one embodiment as shown in FIG. 3B, a user defines 65 multiple groups to be gathered at the same time. For example: an “Evening Scene” is desired to link the following zones:

US 11,388,532 B2

9

Group 1
 Bedroom
 Den
 Dining Room
 Group 2
 Garage
 Garden

where Bathroom, Family Room and Foyer should be separated from any group if they were part of a group before the Zone Scene was invoked.

One important of the features, benefits and objects in the present invention is that that zones do not need to be separated before a zone scene is invoked. In one embodiment, a command is provided and links all zones in one step, if invoked. The command is in a form of a zone scene. After linking the appropriate zones, a zone scene command could apply the following attributes:

- Set volumes levels in each zones (each zone can have a different volume) Mute/Unmute zones.
- Select and play specific music in the zones.
- Set the play mode of the music (Shuffle, Repeat, Shuffle-repeat)
- Set the music playback equalization of each zone (e.g., bass treble).

A further extension of this embodiment is to trigger a zone scene command as an alarm clock function. For instance the zone scene is set to apply at 8:00 am. It could link appropriate zones automatically, set specific music to play and then stop the music after a defined duration. Although a single zone may be assigned to an alarm, a scene set as an alarm clock provides a synchronized alarm, allowing any zones linked in the scene to play a predefined audio (e.g., a favorable song, a predefined playlist) at a specific time or for a specific duration. If, for any reason, the scheduled music failed to be played (e.g., an empty playlist, no connection to a share, failed UPnP, no Internet connection for an Internet Radio station), a backup buzzer will sound. This buzzer will be a sound file that is stored in a zone player.

FIG. 4 shows an exemplary user interface 400 that may be displayed on a controller 142 or a computer 110 of FIG. 1. The interface 400 shows a list of items that may be set up by a user to cause a scene to function at a specific time. In the embodiment shown in FIG. 4, the list of items includes "Alarm", "Time", "Zone", "Music", "Frequency" and "Alarm length". "Alarm" can be set on or off. When "Alarm" is set on, "Time" is a specific time to set off the alarm. "Zone" shows which zone players are being set to play a specified audio at the specific time. "Music" shows what to be played when the specific time arrives. "Frequency" allows the user to define a frequency of the alarm. "Alarm length" defines how long the audio is to be played. It should be noted that the user interface 400 is provided herein to show some of the functions associated with setting up an alarm. Depending on an exact implementation, other functions, such as time zone, daylight savings, time synchronization, and time/date format for display may also be provided without departing from the present invention.

According to one embodiment, each zone player in a scene may be set up for different alarms. For example, a "Morning" scene includes three zone players, each in a bedroom, a den, and a dining room. After selecting the scene, the user may set up an alarm for the scene as whole. As a result, each of the zone players will be activated at a specific time.

FIG. 5A shows a user interface 500 to allow a user to form a scene. The panel on the left shows the available zones in a household. The panel on the right shows the zones that

10

have been selected and be grouped as part of this scene. Depending on an exact implementation of a user interface, Add/Remove buttons may be provided to move zones between the panels, or zones may be dragged along between panels.

FIG. 5B shows another user interface 520 to allow a user to form a scene. The user interface 520 that may be displayed on a controller or a computing device, lists available zones in a system. The list of zones in the user interface 520 includes ALL the zones in the system, including the zones that are already grouped. A checkbox is provide next to each of the zones so that a user may check in the zones to be associated with the scene.

FIG. 5C shows a user interface 510 to allow a user to adjust a volume level of the zone players in a zone scene individually or collectively. As shown in the user interface 510, the Volumes . . .' button (shown as sliders, other forms are possible) allows the user to affect the volumes of the associated zone players when a zone scene is invoked. In one embodiment, the zone players can be set to retain whatever volume that they currently have when the scene is invoked. Additionally the user can decide if the volumes should be unmuted or muted when the scene is invoked.

FIG. 6 shows a flowchart or process 600 of providing a player theme or a zone scene for a plurality of players, where one or more of the players are placed in a zone. The process 600 is presented in accordance with one embodiment of the present invention and may be implemented in a module to be located in the memory 282 of FIG. 2C.

The process 600 is initiated only when a user decides to proceed with a zone scene at 602. The process 600 then moves to 604 where it allows a user to decide which zone players to be associated with the scene. For example, there are ten players in a household, and the scene is named after "Morning". The user may be given an interface to select four of the ten players to be associated with the scene. At 606, the scene is saved. The scene may be saved in any one of the members in the scene. In the example of FIG. 1, the scene is saved in one of the zone players and displayed on the controller 142. In operation, a set of data pertaining to the scene includes a plurality of parameters. In one embodiment, the parameters include, but may not be limited to, identifiers (e.g., IP address) of the associated players and a playlist. The parameters may also include volume/tone settings for the associated players in the scene. The user may go back to 602 to configure another scene if desired.

Given a saved scene, a user may activate the scene at any time or set up a timer to activate the scene at 610. The process 600 can continue when a saved scene is activated at 610. At 612, upon the activation of a saved scene, the process 600 checks the status of the players associated with the scene. The status of the players means that each of the players shall be in condition to react in a synchronized manner. In one embodiment, the interconnections of the players are checked to make sure that the players communicate among themselves and/or with a controller if there is such a controller in the scene.

It is assumed that all players associated with the scene are in good condition. At 614, commands are executed with the parameters (e.g., pertaining to a playlist and volumes). In one embodiment, data including the parameters is transported from a member (e.g., a controller) to other members in the scene so that the players are caused to synchronize an operation configured in the scene. The operation may cause all players to play back a song in identical or different volumes or to play back a pre-stored file.

US 11,388,532 B2

11

FIG. 7 shows an example user interface for invoking a zone scene. The user interface of FIG. 7 shows a Zone Menu that includes selectable indications of zone scenes.

FIG. 8 shows another example user interface for invoking a zone scene. FIG. 8 shows a Zone Menu that includes a softkey indicating a Scenes menu. Pressing the Scenes softkey will show the Scenes menu where all the available zone scenes are shown as selectable indications.

One of the features, benefits and advantages in the present invention is to allow sets of related devices (controllers and operating components) to exist as a group without interfering with other components that are potentially visible on the same wired or wireless network. Each of the sets is configured to a theme or a scene.

The present invention has been described in sufficient detail with a certain degree of particularity. It is understood to those skilled in the art that the present disclosure of embodiments has been made by way of examples only and that numerous changes in the arrangement and combination of parts may be resorted without departing from the spirit and scope of the invention as claimed. While the embodiments discussed herein may appear to include some limitations as to the presentation of the information units, in terms of the format and arrangement, the invention has applicability well beyond such embodiment, which can be appreciated by those skilled in the art. Accordingly, the scope of the present invention is defined by the appended claims rather than the forgoing description of embodiments.

We claim:

1. A computing device comprising:
at least one processor;
a wireless network interface configured to communicatively couple the computing device to a wireless data network;
a non-transitory computer-readable medium; and
program instructions stored on the non-transitory computer-readable medium that are executable by the at least one processor and thereby cause the computing device to be configured to:
while serving as a controller for a networked media playback system comprising a first zone player and a second zone player, wherein the first zone player is operating in a standalone mode in which the first zone player is configured to play back media received over the wireless data network individually:
receive, via the wireless network interface, zone configuration data that characterizes two or more zone scenes, wherein a first zone scene comprises a first group configuration including at least a first zone player and a second zone player that are to be configured for synchronous playback of media over the wireless data network when the first zone scene is invoked, and wherein a second zone scene comprises a second group configuration including the first zone player and a third zone player but not the second zone player;
cause selectable indications of the two or more zone scenes to be simultaneously displayed, wherein the displayed selectable indications are each selectable to cause a respective one of the two or more zone scenes to be invoked by the first zone player; and
receive a request to invoke the first zone scene; and
based on the request, cause the first zone player to transition from operating in the standalone mode to operating in accordance with the first group configuration such that the first zone player is configured to

12

coordinate with at least the second zone player over the wireless data network to output media in synchrony with output of media by at least the second zone player.

2. The computing device of claim 1, wherein the program instructions that are executable by the at least one processor and thereby cause the selectable indication of the first zone scene to be displayed comprise program instructions that are executable by the at least one processor and thereby cause the computing device to be configured to cause an indication of the first group configuration to be displayed.

3. The computing device of claim 1, wherein the first group configuration consists of one group of zone players to be configured for synchronous playback of media when the first zone scene is invoked.

4. The computing device of claim 1, wherein the first group configuration comprises two or more groups of zone players, each respective group of zone players configured for synchronous playback of respective media when the first zone scene is invoked.

5. The computing device of claim 1, further configured to: before receiving the zone configuration data, cause storage of the zone configuration data characterizing the two or more zone scenes.

6. The computing device of claim 1, wherein the zone configuration data characterizing the two or more zone scenes comprises (a) an indication of at least the first zone player and the second zone player comprising the first zone scene and (b) at least one other parameter pertaining to the first zone scene.

7. The computing device of claim 6, wherein the at least one other parameter pertaining to the first zone scene is one or more of (i) a volume level, (ii) a specific media item to be played back, (iii) a play back mode, or (iv) an equalization.

8. The computing device of claim 1, wherein each of the first zone player and the second zone player is associated with a name.

9. The computing device of claim 1, wherein each of the two or more zone scenes is associated with a name.

10. A method implemented by a computing device, the method comprising:

while serving as a controller for a networked media playback system comprising a first zone player and a second zone player, wherein the first zone player is operating in a standalone mode in which the first zone player is configured to play back media received over the wireless data network individually:
receiving, via a network wireless network interface configured to communicatively couple the computing device to the wireless data network, zone configuration data that characterizes two or more zone scenes, wherein a first zone scene comprises a first group configuration including at least a first zone player and a second zone player that are to be configured for synchronous playback of media over the wireless data network when the first zone scene is invoked, and wherein a second zone scene comprises a second group configuration including the first zone player and a third zone player but not the second zone player; and
causing selectable indications of the two or more zone scenes to be simultaneously displayed, wherein the displayed selectable indications are each selectable to cause a respective one of the two or more zone scenes to be invoked by the first zone player; and
receiving a request to invoke the first zone scene; and

US 11,388,532 B2

13

based on the request, causing the first zone player to transition from operating in the standalone mode to operating in accordance with the first group configuration such that the first zone player is configured to coordinate with at least the second zone player over the wireless data network to output media in synchrony with output of media by at least the second zone player.

11. The method of claim 10, wherein causing the selectable indication of the first zone scene to be displayed comprises causing an indication of the first group configuration to be displayed.

12. The method of claim 10, wherein the first group configuration consists of one group of zone players to be configured for synchronous playback of media when the first zone scene is invoked.

13. The method of claim 10, wherein the first group configuration comprises two or more groups of zone players, each respective group of zone players configured for synchronous playback of respective media when the first zone scene is invoked.

14. The method of claim 10, further comprising: before receiving the zone configuration data, cause storage of the zone configuration data characterizing the two or more zone scenes.

15. The method of claim 10, wherein the zone configuration data characterizing the two or more zone scenes comprises (a) an indication of at least the first zone player and the second zone player comprising the first zone scene and (b) at least one other parameter pertaining to the first zone scene.

16. The method of claim 15, wherein the at least one other parameter pertaining to the first zone scene is one or more of (i) a volume level, (ii) a specific media item to be played back, (iii) a play back mode, or (iv) an equalization.

17. The method of claim 10, wherein each of the first zone player and the second zone player is associated with a name.

18. The method of claim 10, wherein each of the two or more zone scenes is associated with a name.

19. A tangible, non-transitory computer-readable medium, wherein the non-transitory computer-readable medium is provisioned with program instructions that are executable by at least one processor such that a computing device is configured to:

while serving as a controller for a networked media playback system comprising a first zone player and a second zone player, wherein the first zone player is operating in a standalone mode in which the first zone player is configured to play back received over a wireless data network individually:

receive, via a wireless network interface configured to communicatively couple the computing device to the wireless data network, zone configuration data that characterizes two or more zone scenes, wherein a first zone scene comprises a first group configuration including at least a first zone player and a second zone player that are to be configured for synchronous playback of media over the wireless data network when the first zone scene is invoked, and wherein a second zone scene comprises a second group configuration including the first zone player and a third zone player but not the second zone player; and

cause selectable indications of the two or more zone scenes to be simultaneously displayed, wherein the displayed selectable indications are each selectable to cause one of the two or more zone scenes to be invoked by the first zone player; and

14

receive a request to invoke the first zone scene; and based on the request, cause the first zone player to transition from operating in the standalone mode to operating in accordance with the first group configuration such that the first zone player is configured to coordinate with at least the second zone player over the wireless data network to output media in synchrony with output of media by at least the second zone player.

20. The non-transitory computer readable medium of claim 19, wherein the program instructions that are executable by at least one processor such that the computing device is configured to cause the selectable indication of the first zone scene to be displayed comprise program instructions that are executable by at least one processor such that the computing device is configured to cause an indication of the first group configuration to be displayed.

21. The non-transitory computer readable medium of claim 19, wherein the first group configuration consists of one group of zone players to be configured for synchronous playback of media when the first zone scene is invoked.

22. The non-transitory computer readable medium of claim 19, wherein the first group configuration comprises two or more groups of zone players, each respective group of zone players configured for synchronous playback of respective media when the first zone scene is invoked.

23. The non-transitory computer readable medium of claim 19, wherein the operations further comprise:

before receiving the zone configuration data, cause storage of the zone configuration data characterizing the two or more zone scenes.

24. The non-transitory computer readable medium of claim 19, wherein the zone configuration data characterizing the two or more zone scenes comprises (a) an indication of at least the first zone player and the second zone player comprising the first zone scene and (b) at least one other parameter pertaining to the first zone scene.

25. The non-transitory computer readable medium of claim 24, wherein the at least one other parameter pertaining to the first zone scene is one or more of (i) a volume level, (ii) a specific media item to be played back, (iii) a play back mode, or (iv) an equalization.

26. The non-transitory computer readable medium of claim 19, wherein each of the first zone player and the second zone player is associated with a name.

27. The non-transitory computer readable medium of claim 19, wherein each of the two or more zone scenes is associated with a name.

28. The computing device of claim 5, wherein the program instructions that are executable by the at least one processor and thereby cause the computing device to be configured to cause storage of the zone configuration data comprise program instructions that are executable by the at least one processor and thereby cause the computing device to be configured to cause storage of the zone configuration data at a location other than the computing device.

29. The computing device of claim 28, wherein the location other than the computing device is the first zone player.

30. The method of claim 14, wherein causing storage of the zone configuration data comprises causing storage of the zone configuration data at a location other than the computing device.

31. The method of claim 30, wherein the location other than the computing device is the first zone player.

32. The non-transitory computer readable medium of claim 23, wherein the program instructions that are executable by at least one processor such that the computing device is configured to cause storage of the zone configuration data

US 11,388,532 B2

15

comprise program instructions that are executable by at least one processor such that the computing device is configured to cause storage of the zone configuration data at a location other than the computing device.

33. The non-transitory computer readable medium of ⁵ claim **32**, wherein the location other than the computing device is the first zone player.

* * * * *

16